

The background of the cover is a photograph of a vast desert landscape. In the foreground, a large, smooth sand dune slopes down from the left. In the middle ground, a small, gnarled, and leafless tree stands on a patch of dark, possibly wet or mineral-rich soil. Behind the tree, more sand dunes rise, their ridges and valleys softened by a hazy, atmospheric light. The sky is a pale, uniform blue. The overall mood is one of isolation and the stark beauty of an arid environment.

bulletin

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THE SAHEL: OUT OF THE MYTHS



Bulletin of
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Conservation Union

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Cover: A dead acacia in a sea of
sand at Adrar Chiriet in the Air
region of Niger (photo: WWF/John
Newby).

A Strategy for the World Conservation Union

Any organization needs a clear statement of its mission, its approach, and its objectives for the next ten years – and effective tactics for achieving those objectives. We are now half-way through the triennium between General Assemblies, and this is a good time to develop a Strategy for IUCN, for adoption at the next General Assembly. We should start by considering the kind of body that the Union is, and the work it should be doing.

IUCN has one unique feature. It is the only World Conservation Union. That is, it is the only organization that links nearly half the world's governments, over 120 government agencies, and over 400 non-governmental organizations. It brings campaigning bodies together with those whose approach is to provide confidential technical advice. It links learned societies with non-scientific advocacy groups. It embraces organizations concerned with broad global issues and those focusing on the conservation of limited areas or particular kinds of plant or animal. The Union thus provides a unique framework for debate, leading not so much to a consensus as to a continual evolution of understanding of the environmental needs and problems of the world.

The nature of the Union needs reflection in any statement of its mission. I suggest this might be: "to harness the insight and skill of the international conservation movement in order to promote an enduring balance between humanity and the world environment". Many organizations encapsulate such general statements of objective in a shorter "slogan" like that of FAO: "To abolish hunger". We too could do with a slogan and perhaps it can be of similar brevity: "Harmony with nature".

Member organizations do not join IUCN simply to support the cause. They expect that their participation will bring benefits, and especially an opportunity for collective action and enhanced influence. Our Strategy must meet this need. We must improve communication among members – not least through the *Bulletin*. The Commissions, as a series of committees and task forces of expert volunteers, are a principal means for member involvement and we must ensure not only that their work plans for the next triennium reflect the priorities of member organizations but that individuals from these organizations have the fullest possible opportunity to participate in their activities.

The work of the Commissions must interlock with the thematic programmes and projects run by the Secretariat – activities funded in large part by member governments and their aid agencies. The programme as a whole clearly needs to address the world's highest priorities and it needs to attain the highest standards of professional excellence. Our business is the assembly of expert knowledge and opinion from the widest possible expert membership, the conduct of debate to test the validity of that knowledge and to refine human insights into the environmental situation, and the provision of authoritative and dispassionate guidance on the actions that should be taken. Even where the actions proposed are not universally accepted, there must be a consensus on the professionalism by which those proposals have been developed. When a member brings an issue to the Union, it should do so in confidence that it is genuinely elevating its problem to a higher level, and will derive a more trustworthy solution than it could provide for itself within its own machinery. And I am not speaking only of theoretical insights. I believe that IUCN must be a practical body promoting actions that can be demonstrated on the ground through high-quality projects which are valuable in themselves and set examples that people elsewhere want to follow.

The Union must focus its programme. One major priority is to press for the conservation of the world's biological diversity. This living wealth is the foundation of the human life support system, has enormous aesthetic quality, and is of great actual or potential economic value to human communities. The work of the Secretariat on tropical forests, wetlands, and coastlands, together with the work of the Commissions on species and habitat conservation should be welded together. The 1992 World Protected Areas Congress offers us an opportunity to restate the contribution that protected areas of various kinds can make to the conservation and sustainable use of the world's biological resources.

Another major challenge is the impact on the world's ecosystems and on the sustainability of development of the global changes brought about by soaring human populations and by the perturbations of climate and sea level likely to result from the continuing discharge of "greenhouse gases". IUCN should be well-placed to make authoritative statements about

Continued on page 4 ...

A Tribute to

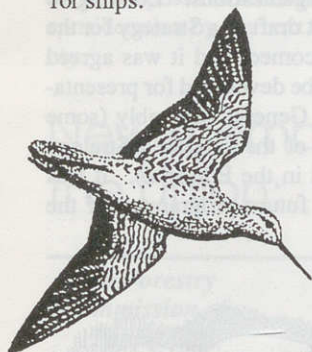
Sir Peter Scott

1909-1989

Peter Scott, who died on 29 August, less than three weeks before his 80th birthday, was a man of extraordinarily diverse talents and a towering figure in the world of conservation.

His father, the Antarctic explorer, writing from his last camp a few days before his death, urged his mother to "make the boy interested in natural history if you can; it is better than games; they encourage it at some schools." Wise advice, well taken, for Peter became an ardent naturalist and made his keen observations of birds, especially of wildfowl, the basis of his career as a painter.

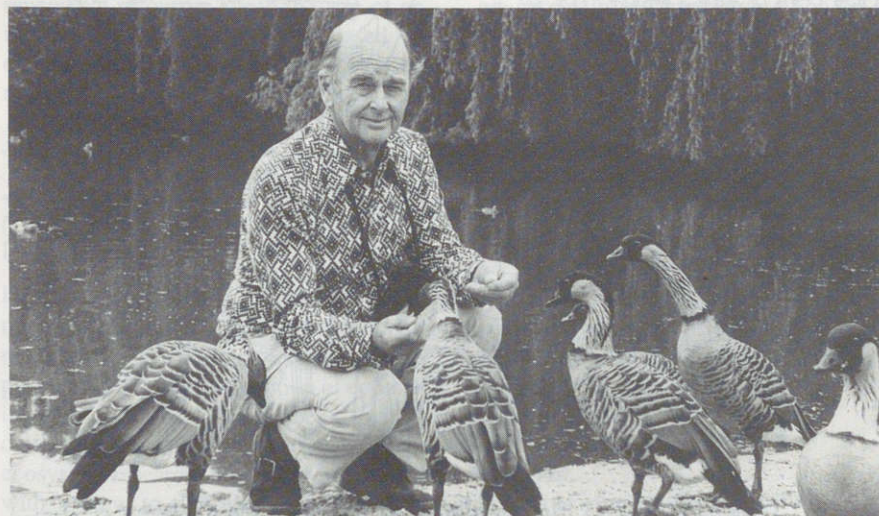
But he also showed early skills as a sailor, winning dinghy championships and an Olympic bronze medal in the 1930s; these skills were emphasized in a gallant and unorthodox war service commanding "light coastal forces" – armed patrol boats. He was three times mentioned in despatches and awarded the Distinguished Service Cross and Bar, and was also honoured for deploying his artistic skills to invent a new system of camouflage for ships.



After the war he took up gliding, winning fresh international distinction and becoming British National Champion in 1963. His love of waterfowl, and his concern for their conservation, led him to found the Wildfowl Trust in 1946. Soon afterwards he began to lead expeditions into the remoter regions of the Arctic, especially to study the breeding grounds of wild geese and to ring birds so that their migration could be followed.

Peter Scott was associated with IUCN from its beginnings. He was elected to the Council in 1956, chaired the Species Survival Commission for 18 years, from 1963 to 1980, and remained *Chairman Emeritus* until the day of his death. He was largely responsible for making it the force it has become in world conservation. He broadened its mandate to include plants and invertebrates as well as

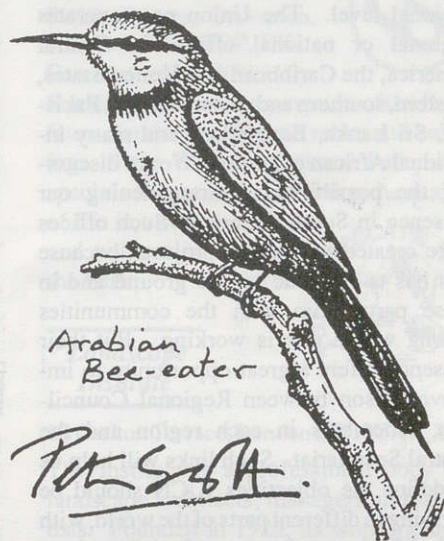
birds and mammals, and built up the network of specialist groups, which now number 80, involving 2300 members in 134 countries. He invented Red Data Books. As a long-serving member of the IUCN Council, and one of the creators of WWF, he was at the heart of international conservation for more than 30 years. During his service as Chairman of WWF International and WWF-UK, he acted as an important bridge between WWF and IUCN. As the architect and presenter of the BBC's "Look" series, he pioneered the popular natural history television programmes that did so much to build public understanding of ecology and have become a worldwide force. In his later years he devoted himself especially to whale conservation and to the preservation of Antarctica, doing much to alert both Governments and public to the need for better protection for the world's greatest animals and the world's last wilderness.



WWF/Philippa Scott



WWF/Elizabeth Kempf



Arabian
Bee-eater

Peter Scott

His books transmitted his artist's eye, his deep knowledge of nature, and his dedication to the conservation of the natural world – not only because it is the foundation of the human future, but because of its beauty and capacity to inspire.

Sons of famous fathers do not find it easy to make their own reputation in the world, but Peter Markham Scott achieved distinction in many fields and won worldwide honour and acclaim. He was fortunate in that his creativity and enjoyment of life never waned. Despite some ill health, he travelled, explored coral reefs, wrote and painted right to the end of his life.

Few men have so deserved the tribute Samuel Johnson paid to Oliver Goldsmith: "he touched nothing that he did not adorn." The world of conservation is greatly impoverished by the loss of Peter Scott, but will long be enriched by all that he gave us. □

... Editorial, continued from page 2

the implications of these changes. We should be able to help individual members, especially in developing countries to evaluate the significance of change for their conservation and development programmes.

A third major contribution we should make is in the development of policies and actions that will create "harmony with nature". We are embarking on a revision of the World Conservation Strategy for the 1990s. We are assisting many member governments to compile National Conservation Strategies. The Union helps many developing countries to introduce environmental impact assessment procedures. The Environmental Law Centre contributes to the development of new legal instruments at both international and national level. Our work on the promotion of sustainable development, and the development of education and training have as their fundamental objective the guiding of people to use their environment more wisely.

Our effectiveness will be increased if we strengthen our links with the membership at regional level. The Union now operates regional or national offices in Central America, the Caribbean, the United States, western, southern and eastern Africa, Pakistan, Sri Lanka, Bangladesh and many individual African countries. We are discussing the possibility of strengthening our presence in South America. Such offices were created to manage projects, because this has to be done on the ground and in close partnership with the communities among whom one is working. But their presence offers a great opportunity to improve liaison between Regional Councillors, members in each region and the central Secretariat. Such links will help us to define the objectives IUCN should be pursuing in different parts of the world, with their differing environmental needs and opportunities.

Looking to the ten-year objectives for the Union, therefore, I see the following priorities: strengthening the membership in all parts of the world; building better links with that membership; maintaining the highest professional standards in our work; concentrating that work on priority topics of the highest importance to our members; and communicating our conclusions so that world policies on conservation and sustainable development are advanced.

If we can do all this, I believe we will not lack support and resources.

Martin W. Holdgate
Director General

Report from the Council

A salute to members, progress and solvency

The 27th meeting of the IUCN Council was held on 12-14 June 1989. The President, 19 Regional Councillors and seven Commission Chairmen and Deputy Chairmen attended.

As part of the formal opening business, Mr Kenneth A. Brynaert, Executive Vice President of the Canadian Wildlife Federation, was appointed to replace Dr David Munro, who had resigned on becoming Director of the WCS-90s project. Professor Pierre Goeldin was endorsed as representative of the Swiss Confederation, and appointed as a member of the Bureau, and Mr M.A. Partha Sarathy was nominated to attend Bureau meetings as representative of the Commissions.

Council paid tribute to Mr Grenville Lucas, who was stepping down as Chairman of SSC, and welcomed Dr George Rabb as his successor.

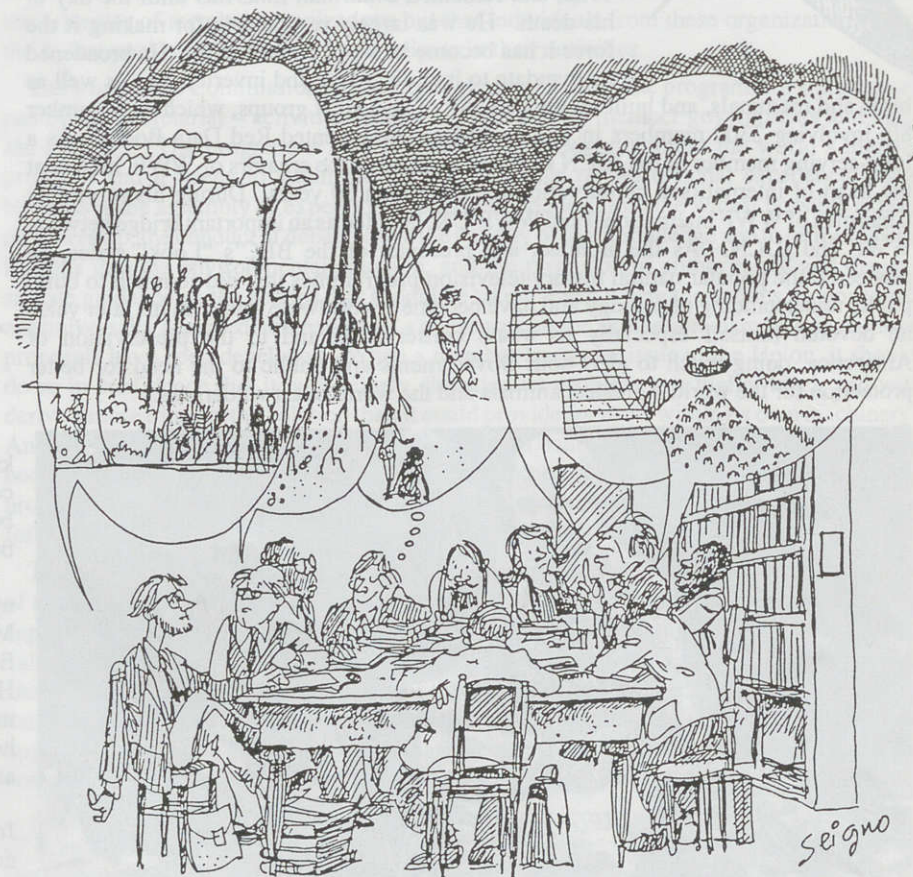
The Council then admitted ten new members of IUCN, in various categories, and approved 11 transfers between

categories of membership. This took the membership to 60 States, 120 government agencies, 394 national NGOs, 38 international NGOs, and 23 affiliates: 635 in all.

The Treasurer, Mr R.C. Steele, reported on a good financial year in 1988, with SFr 150,000 set aside to repay the accumulated deficit in core funds, SFr 400,000 divided between Operational Reserve, Capital Fund and Publications Fund, and a schedule to repay all outstanding core fund deficits over ten years. Thanks to the generous legacy from the late Julia Ward, IUCN's endowment exceeded its deficit, while expenditure was under control.

IUCN was solvent. The prospects for 1989 were good. Funds for 1990 were being raised. The Council expressed its pleasure at this great improvement in the Union's financial position.

The Council also reviewed progress with the triennial programme, welcoming the substantial activity reported by the Director General, Commission Chairmen, and collaborating organizations. Looking to the future, a first draft of a Strategy for the Union was welcomed, and it was agreed that this should be developed for presentation at the next General Assembly (some salient features of the proposed Strategy are summarised in the Editorial). It was agreed that the future programme of the



"Our business is the assembly of expert knowledge...."

Union must focus on areas of science relevant to conservation and sustainable development, that links with members – including links via the expanding network of regional offices – must be strengthened, and that there should be closer integration between Commission and Secretariat programmes. Preparations for the 1992 World Protected Areas Congress and the development of the World Conservation Strategy for the 1990s had high priority, and the former offered an opportunity for new thinking about the whole issue of conserving the world's biological diversity.

Finally, Council adopted Policy Statements on Research Involving Species at Risk of Extinction and on State Gifts of Animals, agreed on procedures for the development of further Policy Statements, endorsed the Director General's approach to a formal structure of staff grades and associated pay scales, reaffirmed that it wished the Union's Headquarters to remain in the region around Gland, and reviewed possible revisions to Statutes for consideration by the next General Assembly.

New members of the Union:

The Forestry Commission of Tasmania

Surrey House, 199 Macquarie Street, GPO Box 207 B, 7001 Hobart, Australia.



The Forestry Commission is the land-managing agency for Tasmania's State forests, which represent 23 per cent of the State's total land area. The Commission manages the Crown forest estate and its renewable resources "with the aim of ensuring stability in the wood-based industries whilst maintaining acceptable standards of forest environmental values."

Fundación Puerto Rastrojo

(Puerto Rastrojo Foundation) Apartado Aéreo 241438, Bogotá, Colombia

Founded in February 1982, the Puerto Rastrojo Foundation is dedicated to the conservation and sustainable management of areas and natural resources through and promotion and implementation of ecologically-sound initiatives and research. It seeks to involve traditional cultures in Colombia's development process; to carry out ecosystem research, especially in the Amazonian region, with a view to defining management options; and to promote natural science education.

Biologforbundet

(Biologists' Association) Oestergade 9, 8450 Hammel, Denmark.

Founded in 1971, this national association of teachers, biologists and others interested in biology, works to promote environmental education in schools and the dissemination of biological information to the public and to Danish authorities by means of publications, courses, trips, seminars, and campaigns.



Comité de Résistance à la Destruction de l'Environnement Martiniquais

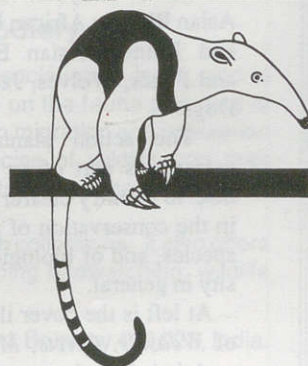
(Committee of Resistance against Nature Destruction in Martinique) Voie No 5, rue du Professor Garcin, 97200 Fort de France, Martinique.

Founded in 1982, this activist group encourages popular resistance against the squandering of the economic potential of Martinique, drawing attention to ecologically destructive activities and sources of pollution, intervening whenever environmental regulations are contravened, and working to develop an ecological policy for the island adapted to the needs of its people.

Institutt for naturforvaltning

(Department of Nature Conservation) Agricultural University of Norway, PO Box 39, 1432 Aas-NLH, Norway.

This University Department, founded in April 1975, is responsible for education and research in nature conservation, wildlife and inland fisheries management. It is the only Norwegian institute offering education in nature conservation to the Master's Degree level, and its main objective is to prepare graduates for government work in natural resources management.



Teachers' Resource Centre

67-B Garden Road, Karachi, Pakistan.

This NGO was founded in 1986 to provide in-service education and training. It offers library, reprographic and audio-visual facilities and advisory services. The TRC collaborates with IUCN in Pakistan and forms part of IUCN's outreach programme to teachers, students and educational institutions.



Environmental Foundation Ltd.

35 Alvis Place, Colombo 3, Sri Lanka.

A public interest law firm working in the field of environment, the EFL was founded in August 1981. It works to apply environmental law in all its aspects to the effort to make Sri Lanka's courts and administrative agencies into effective instruments of environmental protection.



Exmoor Society

Parish Rooms, Dulverton, Somerset TA22 9DP, UK.

Founded in 1958, the Society promotes conservation of the flora, fauna, landscape, historic relics and buildings of the Exmoor National Park, with special reference to maintaining the quality of life in towns and villages in the Park.



Landscape Institute

12 Carlton Terrace, London SW1Y5AH, UK.

The Institute is a professional body for landscape architects, managers and scientists. Founded in 1929, its work includes carrying out environmental impact assessments of development proposals and helping developing countries to prepare conservation strategies.



Society for Conservation Biology

Department of Biology, Montana State University, Bozeman MT 59717, USA.

The SCB is a society of scientists and managers concerned with protection of biodiversity. It works to develop the scientific and technical means to protect, maintain and restore life on Earth. Its activities include promoting quality and ethical standards in research, information dissemination, conservation education, provision of funding, and recognition of outstanding work by individuals and groups. □

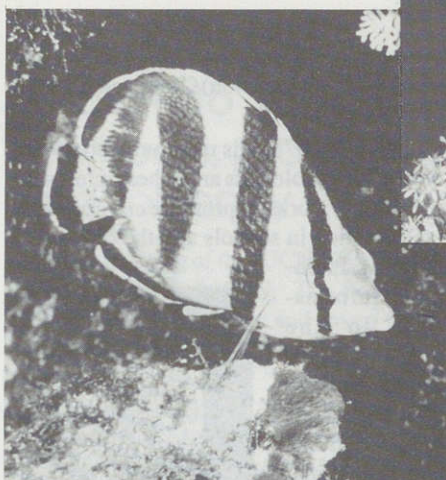
Species Survival Commission (SSC)

SSC meets in Rome

More than 230 specialists representing over 80 groups concerned with saving "endangered, vulnerable and rare" animals and plants met in Rome on 20-22 August.

The 64th Meeting of the IUCN Species Survival Commission, hosted by the University of Rome's Department of Animal and Human Biology, had a full agenda.

"Perhaps the most important outcome of the meeting was the proposal for a new IUCN threatened species category system," reports Stephen Edwards, Coordinator of the Species Conservation Programme at IUCN headquarters. "We have long been concerned that terms like 'endangered' and 'vulnerable' are applied in different ways by different people. Earlier this year, IUCN commissioned a white paper by Georgina Mace, a population biologist at the Zoological Society of London, proposing a new system for defining categories of threat, based on principles of population biology. This proposal will now be refined by scientists with the intent of presenting it to the IUCN Council next year."

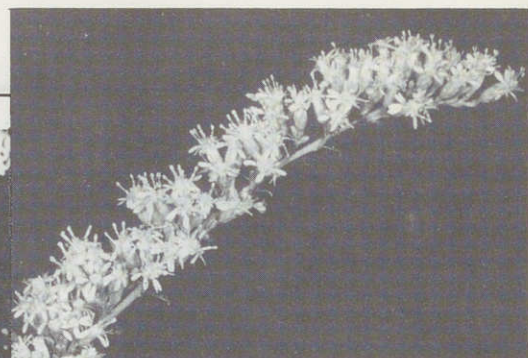


WWF/Nancy Sefton

The Rome meeting also adopted the Heritage Species Programme, with strong support from the IUCN members present and a significant financial pledge from Conservation International.

The meeting was addressed by Dr Martin Holdgate, IUCN's Director General, on the subject of the World Conservation Strategy for the 1990s, and Jeffrey A. McNeely, Chief Conservation Officer, on conservation of biological diversity. The Commission agreed that species conservation was important in both contexts.

Discussions were held on the process known as "population viability analysis". Steve Edwards explains: "Scientists, government officials and conservationists hold a workshop directed by a group leader who



IUCN/Robert Mohlenbrock

Subjects at this year's SSC meeting ranged from butterfly fish to Short's goldenrod.

gradually gleans from their interactions the data needed to formulate formal conservation programmes. It is an extremely productive procedure that usually starts with subjective exchanges and gradually moves on to a more rigorous and objective plane. Eventually numbers start to come out, which are plugged into computer simulation models whose results are fed back into the process. When the leader is sufficiently skilled, serious controversies can be resolved in as little as three days."

Banana slugs in the spotlight

More than 40 IUCN Specialist Groups reported on their activities over the past year, covering topics ranging from orchids, goldenrod and milkweed to civet otters, Liberian mongooses, butterfly fish, cetaceans, Javan rhinos and the banana slug.

Dr George Rabb, Director of the Chicago Zoological Society, and incoming Chair of the Species Survival Commission, emphasized the new approach of the scientific community as reflected in the discussions:

"In the past, scientists felt that identifying the problem was enough. We focused on animal population dynamics – and we must continue to do so. However, we now realize that the human dimension, with political and economic factors, must be included alongside the biology in our Action Plans. We have to address policy makers at a national level, based on the interest of their people in maintaining the world's natural heritage. When we talk about 'endangered, vulnerable, indeterminate and rare species', we have to do it in more meaningful terms. We need precise methods for predicting this or that animal's survival capacity."

To the question whether the exchange of ideas and experiences in Rome "could save a species", Dr Rabb said he thought "quite a few species will be saved by our coming to grips with the political and socio-economic aspects of species survival efforts."

He added: "Unless we provide for environmental security, we are going to have economic, social and political insecurity with us forever."

Action Plans abound

The year 1989 is proving to be important for the production of SSC Action Plans. Since the beginning of the year, four have been published, on the Kouprey; Southern African Antelopes; Weasels, Civets, Mongooses and their Relatives; and Tortoises and Freshwater Turtles.



The relevant SSC Specialist Groups are now starting the work of promoting the implementation of these Action Plans, especially among the member governments, agencies and organizations of IUCN. Another four Plans are expected to be published before the end of the year. These are: Asian Rhinos; African Elephants and Rhinos; Asian Elephants; and Foxes, Wolves, Jackals and Dogs.

The action planning programme is part of an effort by SSC to identify clearer priorities in the conservation of particular species, and of biological diversity in general.

At left is the cover illustration of *Weasels, Civets, Mongooses and their Relatives*. □

Ferrets for the future

"If we can identify a species, however small the population, and if we have adequate commitments from governments, then the science we have at our disposal today can ensure the survival of that species," according to the leader of the SSC Captive Breeding Specialist Group, Ulysses S. Seal, Professor of Ecology and Wildlife at the University of Minnesota.

Speaking at this year's SSC meeting, Professor Seal cited the successful campaign to save the black-footed ferret.

"There were only 17 of these ferrets in the wild in 1985. To save the species from extinction, all of them (slightly more females than males) were transferred from Meetetse to a captive breeding facility in Sybille, another Wyoming town. Today there are 124 black-footed ferrets in captivity. By 1991 we expect to have 500 of them and we should be releasing most of them back into the wild in Wyoming and eventually in six other states.

Fear for rhinos

Dr Seal told the gathering of the plight of the Javan rhinoceros, fewer than 70 of which survive today. He said the Javan rhino was "polygamous, probably lives 25 years,



Black-footed ferrets *Mustela nigripes* (photo: WWF/B. Radcliffe).

has a single calf, first breeds at about the age of seven, has 16-month gestation, and a three-year minimum interval between births if the calf survives."

Conceding that it will be difficult to save the Javan rhino, Dr Seal reported on a "population viability analysis" that assessed the risk of extinction and indicated practical proposals for "developing viable, self-sustaining populations within the historic range of the species."

Asian elephant centre opened

IUCN has launched a new Asian Elephant Conservation Centre at a June meeting in Bangalore (India).

The centre will promote implementation of the conservation action plan which has been developed by the IUCN/SSC Asian Elephant Specialist Group (AESG). It will set up an advisory service on elephant conservation and management for governments and NGOs within the range of the species, and make the considerable expertise of the AESG more readily available.

The new centre will initially have two full-time staff, and will be coordinated by Dr R. Sukumar, the Deputy Chairman of the AESG. IUCN is most grateful to the Centre for Ecological Sciences at the Indian Institute of Science and to the Bombay Natural History Society for providing the necessary institutional support, and to WWF-International for providing the

funds for the first three years of operation. IUCN has started seeking the larger funds needed to put the centre onto a permanent footing.

Venezuela launch

The new Species Conservation Action Plan for Venezuela was launched on 15 June by the Fundación para la Defensa de la Naturaleza (FUDENA), an NGO member of IUCN.

The plan, which FUDENA hopes will be the first stage in the development of a National Conservation Strategy for Venezuela, originated in a workshop held during the 62nd meeting of the IUCN Species Survival Commission in Caracas in April 1987. The subsequent development of the plan by FUDENA staff members Cecilia de Blohm and Glenda Medina Cuervo included extensive inputs from conservationists in Venezuela and from other SSC members overseas. Publication was made possible by a generous grant from World Wildlife Fund - U.S.

This Action Plan represents the most comprehensive attempt so far to look at species conservation priorities on a national level in South America, and it represents a good example of how IUCN Commissions can collaborate with local institutions in these countries. FUDENA will now be undertaking a major fund-raising programme to put this important plan into action.

Copies are available from FUDENA (address below). □

Bombay Natural History Society

This IUCN member is one of the oldest scientific societies in India, and is recognized as an authoritative source of information on the fauna and flora of the subcontinent. Field work is currently under way on migration and population structure of Indian birds, and on endangered species of wildlife and their habitats. The Society is especially active in efforts to conserve the Asian elephant.

The Society's facilities include a library and research collections. It also offers a range of activities and advice for the public, including birdwatching, wildlife photography, fishing, and field trips.

Address: Hornbill House, Shahid Bhagat Singh Road, Bombay 400 023, India.



Fundación para la Defensa de la Naturaleza (FUDENA)

Founded in 1975 and a member of IUCN since 1980, FUDENA is a private, non-profit association of prominent Venezuelans interested in conservation of the country's natural environment. Its aims include the study and protection of habitats, protection of fauna and flora (with emphasis on threatened species), and environmental education.

Address: Apartado 70376, Caracas 1071A, Venezuela.

Commission on National Parks and Protected Areas (CNPPA)

Conservationist honoured in Zaire

The IUCN Packard Award for Merit in the field of National Parks has been presented to Mankoto ma Mbaelele, Director of the *Institut Zaïrois pour la Conservation de la Nature*.

IUCN's Director General, Dr Martin Holdgate, presented the award on behalf of the Union during events associated with the 50th Anniversary of Garamba National Park in Zaire on 9 May.

The citation reads: "Following the example set by the President of the Republic and fondateur du Mouvement Populaire de la Révolution, Citoyen Mankoto has given effect to the commitment of the people of Zaire to conserve the riches of their natural heritage on behalf of the whole world. His efforts are a courageous example to all who work for an enduring harmony between humanity and nature on this planet."

The award, established for IUCN by CNPPA, is named for the late Fred M. Packard, who served the Commission in its early years.

Scots look at parks

The Countryside Commission for Scotland, with the assistance of a widely representative advisory panel, is reviewing the management of popular mountain areas.



Kayapo Indian with medicinal plant: "extractive reserves" would permit sustainable harvesting from Amazonian forests (photo: WWF/Mauri Rautkari).



Mankoto ma Mbaelele receives the Packard Award from IUCN's Martin Holdgate (photo: IUCN/Rob Malpas).

The study, initiated at government request, includes consideration of the relevance of national parks in the Scottish environment and is due for completion this year.

IUCN, through CNPPA, has been cooperating in the review. Commission Chair Harold Eidsvik, deputy Adrian Phillips and senior advisor Bing Lucas all took part in a seminar with the Commission and the panel held in England's Lake District National Park.

Protected Area scholarships

The Commission has awarded three Johan Ashuvud scholarships for park officers from Argentina, Panama and Venezuela. These will enable them to attend the 12th Annual Course on Wildlands Planning and Management at Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) at Turrialba, Costa Rica.

The scholarships are named to commemorate Johan Ashuvud, who was IUCN's officer in Central America before his death in a car accident in 1988.

Additional scholarships will support Ghanaian participation in protected area training at the College of African Wildlife Management at Mweka, Tanzania. Two more are available for students from Asian

or Pacific countries to attend the Wildlife Institute of India or the School of Environmental Conservation Management (SECM) in Indonesia.

Selection is made by the college concerned, so candidates should apply directly to either the Wildlife Institute, New Forest, Dehra Dun 248006, Uttar Pradesh, India, or SECM, Jalan Gunung Batu, P.O. Box 42, Bogor, Indonesia.

Conservation action in Nicobar

When the CNPPA met in India's Corbett National Park in 1985, a key product of the working session was the Corbett Action Plan for Protected Areas of the Indomalayan Realm. Among the Action Plan's recommendations was protection for distinctive natural communities of the Nicobar Islands in the Bay of Bengal.

Now the Government of India has gazetted a national biosphere reserve to protect Nicobar forests. It is 885 sq km in area, including a core zone of 520 sq km. Outside the core areas, agroforestry and agriculture are practised and, in line with Unesco goals for biosphere reserves, research is an important component: a management council and research committee have been set up.

Are Amazonian parks adequate?

At a recent meeting, the Heads of Protected Area Systems for the six Amazon Basin countries met to consider whether existing systems of protected areas adequately cover the full range of Amazonian ecosystems. Hosted by CNPPA member Carlos Castaño and the staff of INDERENA, the meeting was held in the Amacayacu National Park in Colombia near the borders of Brazil and Peru.

Participants reviewed the management standards of their protected areas, and agreed to greater cooperation in establishing new parks and managing existing ones. They discussed the role of so-called "extractive reserves", areas where sustained use of natural forest products would be permitted while keeping the ecosystem as natural as possible.

The meeting was held under the aegis of the FAO regional network for protected areas and wildlife, headed by Ken Thelen of FAO's regional office in Santiago, Chile. IUCN was represented by Jeff Sayer, Coordinator of the Union's Tropical Forest Programme.

The Amazon group plans to meet annually to discuss the region's protected areas. □

Swiss National Park celebrates 75th

Switzerland pioneered the establishment of European parks and became a leader in international nature conservation when it founded the Swiss National Park 75 years ago.

Speaking to more than 500 people who met recently to celebrate the anniversary, IUCN's Jim Thorsell paid tribute to Swiss conservation initiatives, with special emphasis on the work of the Swiss League for the Protection of Nature in both founding the Park and assisting at the birth of IUCN. He stressed the need for continued citizen involvement in facing the challenges of conservation both nationally and internationally.

The Park is located in eastern Switzerland, and shares an international border with Italy's Stelvio National Park. The town of Zermatt was the scene of anniversary events, including the launching of a new book on the Park by its Director for ten years, Robert Schloeth. *Der Schweizerische Nationalpark, Ein Naturerlebnis* (The Swiss National Park, A Natural Experience) may be purchased from A.T. Verlag, Aarau.

Switzerland's 500th Reserve

On 15 August, the Swiss League for the Protection of Nature launched its 500th nature reserve, "Haumüli", with a press conference and slide show at the Cantonal Museum of Zoology in Lausanne.

The League took the event as an opportunity to focus attention on the country's threatened animals and plants. They pointed out that the 500 reserves account



Switzerland's Aletsch Reserve, one of 500 (photo: WWF/H. Jungius).

Ligue Suisse pour la Protection de la Nature (LSPN)

The Swiss League for the Protection of Nature was founded in 1909 to finance the creation of the Swiss National Park. Since then its major purpose has been the founding of nature reserves. With more than 100,000 members and an annual budget of SFr 6.6 million, this IUCN member pursues a goal of "Protection of nature on all the territory of Switzerland". Address: Case postale 73, 4020 Bâle, Switzerland.



for only 1% of the area of Switzerland. Many of the reserves are quite small and require continuous supervision – the latest comprises only 7.3 hectares in a small valley near Zurich. Although they are veritable "Noah's Arks", the League regards them as only a small link in a complete strategy of nature protection. □

Commission on Environmental Policy, Law and Administration (CEPLA)

Diversity Convention drafted and ready for circulation

After several years of effort, including advisory meetings, informal consultations and drafting sessions, an IUCN proposal for a draft Convention on the Conservation of Biological Diversity is now available.

Fifty draft articles for the Convention, which address conservation measures and provide for the creation of a funding mechanism, have been prepared under the leadership of CEPLA by the Environmental Law Centre. These are now ready for wide circulation to IUCN members and others within the conservation community.

The next *IUCN Bulletin* will carry a full report on the draft Convention: its purpose, its structure and its relationship with other conservation Conventions.

Copies of the draft and explanatory notes are available upon request from the Environmental Law Centre, Adenauerallee 214, D-5300 Bonn 1 (FRG). □

Focus on Botswana

IUCN's role in fostering conservation through major international conventions was highlighted by a recent mission to Botswana by Jim Thorsell, Programme Coordinator for CNPPA. Undertaken at the invitation of the Permanent Secretary of the Ministry of Local Government and Lands, IUCN

was asked to advise on the benefits and obligations involved should the Government of Botswana join the World Heritage and Ramsar Conventions.

One focus of Thorsell's mission was the Okavango Delta, a strong candidate for status as both a World Heritage site and a Ramsar Wetland of International Importance. Hopes are high that Botswana will join the 109 signatories to the World Heritage Convention and the 52 State members of Ramsar. □



Poling through the lower Okavango floodplain (photo: WWF/S. Merron).

Antarctic Strategy drafted

Exploitation of Antarctic waters for whales, seals and, more recently, Antarctic fish and krill has gone on for 200 years. There is a feeling in some quarters that extractable minerals and crude oil are waiting to be discovered beneath the ice.

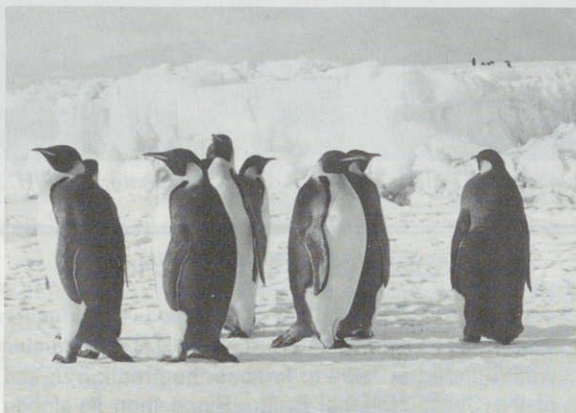
A single, integrated Conservation Strategy for Antarctica is greatly needed if the continent's resources, wildlife and natural beauty are to be preserved. Three IUCN General Assemblies have heard repeated requests from members that the Union develop such a plan.

In answer to this call, IUCN has produced a draft strategy on Antarctic conservation which is now in the hands of all IUCN National Committees and about 100 members.

Based on results from several joint working groups of IUCN and the Scientific Committee on Antarctic Re-

search (SCAR), the strategy was drafted in 1988 by IUCN Director General Martin Holdgate, himself an Antarctic scientist, and reviewed by consultants.

The text will now be revised on the basis of comments received and the outcome of the Paris meeting of Antarctic Treaty Consultative Parties in October. An Antarctic Advisory Group to the Director General will then further review the strategy before its wider circulation early next year. □



Antarctica's Emperor penguins: on the lookout for a coherent conservation strategy (photo:WWF/Eugen Schuhmacher).

IUCN expands in South America

The June Council meeting decided to push ahead with plans to open an IUCN regional office in South America. It also agreed that IUCN must develop its position on the controversy surrounding the future of the forests of the Amazon Basin.

In August, following an invitation from the authorities in Ecuador, IUCN's Delmar Blasco visited Quito to prepare for a January meeting of all IUCN members in South America. The meeting will be hosted by IUCN Regional Councillor Yolanda Kakabadse, of Ecuador's *Fundación Natura*, and funded by Canadian CIDA, among others. The location and precise role of the regional office will be decided at that time.

Blasco, who heads the International Relations Division of IUCN, was joined in the field by Tropical Forest Programme Coordinator Jeff Sayer and the assistant director of the Central American Regional Office, Alejandro Imbach. Sayer and Imbach made an extensive tour of conservation sites in Ecuadorian Amazonia and also examined the impact of oil exploration, road construction and colonization on the area's forest resources.

These three were then joined by Flavio Coello, head of Protected Areas for the Ecuadorian Amazon, to prepare project profiles focusing on buffer zones and the

million-hectare Yasuni National Park and its adjacent indigenous reserves.

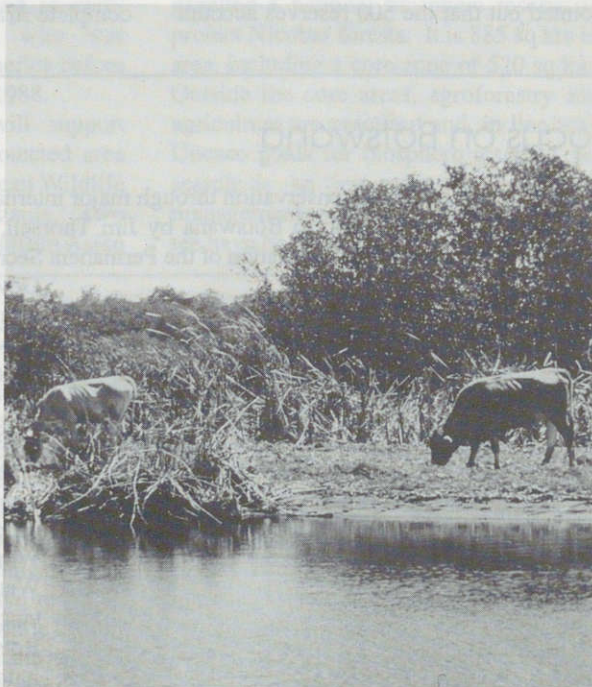
If funded, these projects will contribute to strengthening the Ecuadorian government's capacity to bring about rational conservation and development of the forest resources of the Amazonian region.

A new Caribbean protocol

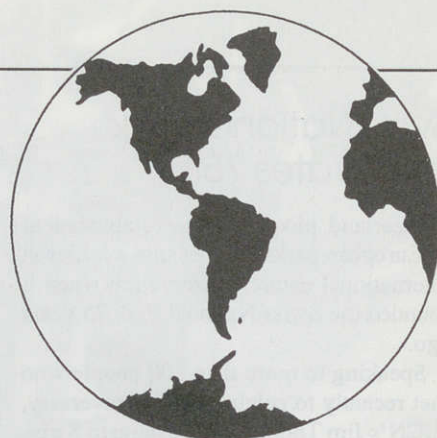
A draft protocol on the protection of wild flora and fauna of the Wider Caribbean will be presented for adoption to an inter-governmental meeting in October.

For the last two years, the 33 Caribbean States supporting the Cartagena Convention have prepared and negotiated the protocol with help from many IUCN members in the Caribbean.

The most recent of two meetings to review the draft protocol was held in June. IUCN has been asked to assist the Caribbean governments in preparing the technical annexes to the protocol and in keeping the protocol under continuous review.



Cattle graze in Guatemala's Monterrico wetlands (photo:WWF/Patrick Dugan).



What are wetlands worth?

A pioneering project to assess the economic value of wetlands in Central America got under way with two workshops held by IUCN and CATIE (Tropical Agricultural Research and Training Centre). They took place in Guatemala City and Petén, Guatemala, 1-6 May, and in Leon, Nicaragua, 7-13 May.

Funded by Norway and Sweden as part of the CATIE-IUCN cooperative programme on conservation for sustainable development in Central America, the project draws upon North American experience in assessing the functional value of wetlands, and the experience of the London Environmental Economics Centre in evaluating natural resources. The project will integrate these two approaches, crafting a methodology appropriate to Central America and other tropical regions.

Field work will take up the rest of 1989, followed in the first half of 1990 by a regional workshop to evaluate the results and the draft methodology.

Self-help study completed

The first of a series of Case Studies in Population and Natural Resources has just been completed.

The 15-page report, based on information collected in the field by Dulce Castleton and Frances Dennis in March 1989, deals with the Guarari Community Development Project in Costa Rica. This unique experiment in low-cost housing, situated between the capital city of San José and the provincial capital of Heredia, is steered by CEFEMINA, a prominent women's organization, and COPAN, a non-governmental organization campaigning for and helping to build community housing.

Guarari, which will eventually have 3000 houses on its 118 hectares, is unique in promoting 'auto-construction' (do-it-yourself building) for impoverished families, many of them headed by women with young children. Each house costs about US\$2500, much less than in similar schemes. The houses are planned in a variety of designs to break monotony, and each group of houses has the social and physical facilities necessary for productive community life.



Building it themselves in Guarari (photo: IUCN/CEFEMINA).

From the conservation viewpoint, the scheme is committed to preserving existing trees, and plans have been made to replant the ravine which crosses Guarari, previously used as a rubbish dump. Cultivation of medicinal plants and a tree nursery are planned for the area, which will also be a place of recreation.

To date, 235 houses have been built and 35 are already inhabited. Temporary houses have been put up to discourage intruders, and these provide homes in the meantime for a few more families. □

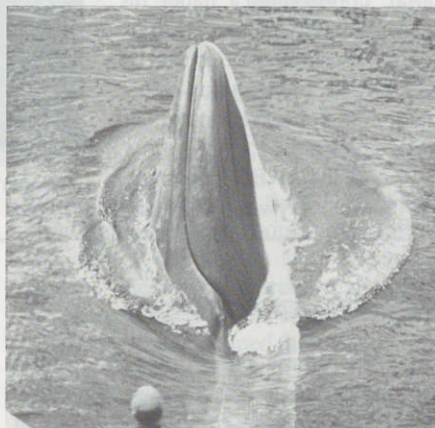
IUCN at IWC: how many whales?

This year's meeting of the International Whaling Commission (IWC) in San Diego, California, was primarily devoted to the Comprehensive Assessment of Whale Stocks, due to be completed by 1990 when the current moratorium on commercial whaling will be reviewed.

The status of IUCN at the full IWC Commission meetings is that of observer; however, a special rule allows an IUCN adviser to attend and participate fully in Scientific Committee meetings. In this capacity, cetacean biologist Justin Cooke attended for IUCN and took part in a review of the methodology for assessment of whale stocks.

For the first time, direct estimates of the populations of large whales in the Antarctic were calculated from survey data. According to the provisional results of the surveys (currently under review), only about 500 blue whales and 2000 fin whales remain in the Antarctic. These estimates contrast sharply with the previous IWC estimates of 11,000 and 102,000, respectively, obtained from the old catch/effort assessment methods.

It is now likely that the Comprehensive Assessment will be completed for only a few whale stocks in time for the 1990 meetings. And in spite of the considerable advances made towards the development of revised management procedures – designed to overcome the deficiencies of the IWC's previous attempts to manage whale populations sustainably – it is also doubtful that this process can be completed by 1990.



Stand up and be counted: there may be far fewer fin whales than we thought (photo: WWF/K. Balcomb).

"Environment bank"

At a recent meeting, the Inter-American Development Bank further committed itself to a more environmentally-sound lending policy, while its President spoke of intentions to make the IDB the "bank of the environment".

The Second Consultation on the Environment, organized by the IDB in Washington (24-26 May), provided another opportunity for dialogue between governments and NGOs in Latin America and the Caribbean. It was attended by officials of the finance and environment ministries (or their equivalents) from each country of the region, national NGOs from the same countries, and a few selected NGOs from the USA, Canada and Europe.

"Most participants were left with the impression that the Bank, and especially its President Enrique Iglesias, are truly committed to reforming its lending procedures," reports Delmar Blasco, who at-

tended for IUCN. "One special feature of the meeting was that governments and NGOs were seated on each side of the table as equal participants, with the Bank taking a kind of observer status. In the past, the Bank sat at the table with the governments and the NGOs had observer status.

"Some participants felt that the ideal situation would be to seat all three parties at the consultation table as equals," notes Blasco.

IUCN was invited to present a paper on cooperation between international NGOs and the multilateral development banks. More details on the Consultation and a copy in English or Spanish of the IUCN contribution are available from Delmar Blasco at IUCN headquarters.

Conservation funding

Building on a year of intensive study and consultation, the World Resources Institute (WRI) held the final meeting of the advisory panel for its "international conservation financing project" in Washington, D.C., in June. Sponsored by the United Nations Development Programme and a group of other donors, the meeting produced a final report aimed at stimulating an increased flow of financial resources and technology to developing countries.

Among the conclusions of the study, perhaps the most startling is that up to US\$22.5 billion will be required to finance developing country conservation over the next decade.

The project was intended to help generate such funding, through four main mechanisms: (1) an international environmental facility (IEF), devoted exclusively to the preparation and financing of □

⇒ conservation projects; (2) a pilot investment programme for sustainable resource use – in essence a small investment bank that would focus on conservation projects; (3) sustainable resource management and debt reduction; and (4) a global environment trust fund financed by levies on greenhouse gases.

The advisory panel included IUCN Regional Councillors José Pedro de Oliveira Costa (Brazil) and Celso Roque (Philippines), representatives from six IUCN member institutions and two IUCN staff members, Jeffrey A. McNeely and Adolfo Mascarenhas. The panel considered the options presented and made recommendations on how the options might be further developed.

The sponsoring institutions expressed great satisfaction in the study's results, and will be exploring ways to put its ideas into practice. Mr James Gustave Speth, President of WRI, concluded, "we are confident that this bold approach will help to transform growing global awareness and political will into concrete action."



Ramsar plans ahead

The second programme coordination meeting of IUCN, the Ramsar Convention Bureau, the International Waterfowl and Wetlands Research Bureau (IWRB), the International Council for Bird Preservation (ICBP), and WWF was held in the Hague on 3 June. The meeting reviewed recent developments in the wetlands programmes of each organization, and plans for the coming six months.

Discussions centred on how the various institutions could help the Ramsar Convention Bureau fulfill its programme over the coming year, and contribute to preparations for the 4th Meeting of Contracting Parties to be held in Montreux, Switzerland, 27 June–4 July 1990.

The next coordinating meeting, to be held at the end of November 1989, will focus on regional activities.

US Botanic Gardens meeting

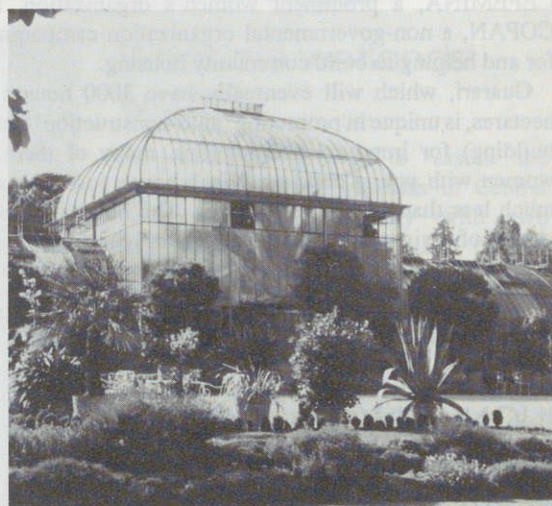
The 1989 Annual Meeting of the American Association of Botanic Gardens and Arboreta was held in June at the Callaway Gardens in Pine Mountain, Georgia.

Conservation was one of the main topics, and several gardens reported success in preserving species, both in the wild and in cultivation. Several speakers made the point that conservation programmes enhance the gardens' development, and an increasing number see this as part of their central mission.

The role of databases in managing conservation collections was also discussed. Professor Vernon Heywood, Director of the IUCN Botanic Gardens Conservation Secretariat, contributed a paper on international databases, outlining the work of the Secretariat and WCMC in managing information on conservation collections and areas.

Prior to the AABGA meeting, Professor Heywood partici-

pated in the Annual Meeting of the 19 gardens which participate in the programme of the Center for Plant Conservation, Jamaica Plain, Massachusetts, to collect, cultivate and study the 3000 or so rare, threatened or endangered native North American plants. He outlined the work of Botanic Gardens Conservation Strategy in building an international network of germplasm collections based on the botanic gardens system. □



Geneva's Botanic Gardens: a new kind of Swiss Bank?
(photo: N. Meith).

What women do

The Programme on Women in Natural Resources Management is just beginning; its first task is to examine the role of women and women's organizations in their communities. Beginning with developing countries – where dependence on resources is most direct – the Secretariat is gathering information on what women do: where and how they work, how they support their households, what resources they control and how they exert that control, how they make decisions and help shape community opinion.

This information will be used for developing policy guidelines aimed at making women more visible participants in natural resources management. These guidelines will then be incorporated into other IUCN programmes, especially the Sahel and Tropical Forest Programmes.

East Europe Programme supported

Thanks to a US\$56,000 grant extension from the Rockefeller Brothers Fund, several projects in Eastern Europe have been carried forward. These include completion of a study of the impact of air pollution on protected areas, training exchanges be-

tween East and West, publication of environmental status reports from seven countries in the regions, support for NGOs, and research into public awareness and citizens' group actions relating to pollution of transboundary lakes and rivers.

The grant will allow the Programme Secretariat and its partners on the European Task Force to get a head start on a decade's worth of activities, while they try to raise some one million dollars in programme support for the next three years.

Funds sought for Nigerian wetlands

A showcase project in the Hadejia-Nguru wetlands of Northern Nigeria is currently the focus of a major fund-raising drive by the Royal Society for Protection of Birds (RSPB).

The project is designed to assist the concerned Nigerian states to improve management of the floodplain. It will attempt to demonstrate the social and economic value of soundly-managed floodplain resources, offering an alternative for national and international investment. It will complement IUCN projects currently under way or in preparation in Mali, Chad and Cameroon. □



Nigerian Conservation Foundation (NCF)

This IUCN member was founded to promote "better and more widespread understanding of the concerns and relevance of conservation", and in answer to fears that Nigeria's wildlife is rapidly disappearing as the result of hunting and rainforest destruction. The

Foundation has supported anti-poaching efforts and funded a research officer for the country's major game reserve, the Yankari. It promotes conservation legislation, educational programmes and the establishment of nature reserves throughout Nigeria.

Address: Mainland Hotel (First Floor), P.O.Box 467, Lagos, Nigeria.

⇒ Here, as in much of the Sahel, the floodplain ecosystem is threatened by plans to divert river water for irrigation. The project includes studies on the hydrology of the river system and the impact of further dam construction in the catchment. It will also establish a number of protected areas in the floodplain with the help of local communities which depend on the wetland's resources.

The project is already a successful example of how a range of IUCN members and collaborating institutions can work together on an effort of national and international importance. Besides RSPB, which initiated the project, the partnership includes the State Governments of Kano, Borno and Bauchi, the Federal Government of Nigeria, the Nigerian Conservation Foundation, the International Council for Bird Preservation (ICBP), the African Wildlife Foundation, the Finnish Association for Nature Protection, FINNIDA and IUCN.

Coastal management and NCS for Guinea-Bissau

Following the opening of an IUCN office in Guinea-Bissau in March, a coastal wetlands management project got under way.

Funded by the Swiss Government, the three-year project will oversee preparation of a coastal management plan and will help the Government protect its coastal resources by setting up a number of protected areas.

At the same time, a National Conservation Strategy (NCS) for Guinea-Bissau is being developed with funding from the European Community. On 19-20 June a workshop on the NCS was held in Bissau which brought together a number of Government departments concerned with natural resource management, and set the scene for the preparation of an NCS document by mid-1990. Meanwhile, a series of field projects will begin to apply NCS principles on-the-ground.



Oman's coasts mapped

For the last four years the IUCN Marine Programme has been cooperating with the Ministry of Commerce and Industry of Oman to develop a tourism plan for the Sultanate. Project leader Rod Salm has so far surveyed and mapped three major areas for potential tourism uses.

The resulting maps and management proposals have now been published. Elements of the management plan include establishment of touristic areas, protected areas such as turtle nesting beaches and areas of high scenic value, as well as areas that could be developed for urban or industrial purposes without causing serious damage to the environment.

The project parallels the development of Oman's national conservation strategy, and should become an integral part of it. The next phase of the project, expected to take 12-18 months, will cover the two remaining areas: the Batinah coast north-west of Muscat and the Musandam peninsula on the Strait of Hormuz.

NCS for Oman

H.M. Sultan Qaboos of Oman has decreed that the Sultanate should have a national conservation strategy. As a first step in preparation of the strategy, a national workshop was held in Muscat, 18-19 June, in collaboration with IUCN and UNEP.

The conference was opened by the Minister of Environment H.H. Sayyid Shabib bin Taimur al Said, and keynote addresses were given by Mark Halle on behalf of IUCN's Director General, and by Saleh Osman on behalf of UNEP.

On the first day of the conference, presentations were made by Mr Anis Mouasher (President, Royal Society of the Conservation of Nature, Jordan), Prof. Subhi Qasem (Faculty of Science, University of Jordan) and Mr Mansour Khalid (Vice-Chairman, World Commission on Environment and Development). They introduced the process of developing a national conservation strategy and placed it in the context of both the World Conservation Strategy and the sustainable development issues pertaining in Oman.

On the second day of the conference, the World Conservation Union team – Mark Halle, Paul Driver and Ayub Qutub – gave a perspective on the NCS process in other countries. The Under-Secretary of the Ministry of Environment, H.E. Bakheet bin Said al-Shanfari, then described the background to the Sultanate's NCS. His presentation was followed by a lively workshop discussion of the nature, scope and procedure of the Oman NCS. ⇒



Green turtle nest pits are seen on a beach in Bandar Jissah, Oman (photo: WWF/Rod Salm).

⇒ Following the workshop, Paul Driver spent a week in consultation with government institutions regarding their activities in natural resource management and their potential contributions to the NCS process. His subsequent report draws together the conclusions of the workshop and consultations, and offers detailed proposals for the initiation of an NCS programme for the Sultanate of Oman.

Debate over the forests of la Réunion

The Union is trying to help resolve a controversy over forest management on the Indian Ocean island of la Réunion.

The debate arose when conservation groups accused the French *Office National des Forêts* of giving too little attention to the conservation of the island's endemic plants and animals, and concentrating too much on industrial use of the forests.

The Forestry Office defended its intensive management of the forests as necessary to protect them against the aggressive exotic plants threatening to take over the landscape.

In response, IUCN commissioned a study by IUCN Councillor Yves Renard and consultant Charles Doumenge from the Institute of Botany, University of Montpellier. Their work has resulted in a book, *La Conservation des Ecosystèmes forestiers de l'île de la Réunion* (in French only), which was presented at the Botanic Gardens Congress in la Réunion last April. Its recommendations are currently under consideration by island authorities.

The study recognized the Forestry Department's valuable work in restoring natural forests in some degraded areas and in taking over abandoned agricultural land to satisfy the island's industrial timber needs. However, it suggests that the Forest Department bolster its botanical expertise and apply it in more sensitive management of its forests. Areas which have not yet been disturbed should be maintained intact, and the programme for gazetted nature reserves should be accelerated. The study also pointed out how opening up new roads and footpaths into natural forest areas can cause very serious damage by allowing exotic plants to colonize.

Société Réunionnaise pour l'Etude et la Protection de la Nature

The Reunion Society for the Study and Protection of Nature was founded in July 1901. This IUCN member carries out scientific research on the island's ecosystems, promotes the wise use of its natural resources and protection of its endangered wildlife, participates in studies to assess potential environmental impacts of development projects, and promotes the enjoyment, understanding and protection of nature through public information programmes.

Address: B.P. 1019, 97481 St Denis, Ile de la Réunion.



Mountains and farms surround Pakistan's Hunza River (photo: WWF/M. Rautkari).

Sustainable forestry in Pakistan

The upper Hunza valley of Pakistan lies at the foothills of the Karakoram range of mountains, and includes the giants Rakaposhi and Haramoshi, the Khunjerab National Park and the famous Khunjerab pass that links China with the Indian subcontinent over the 500-mile Karakoram highway which follows the old "silk route".

A major rural development intervention is under way here: the Aga Khan Rural Support Programme (AKRSP). The AKRSP is revolutionizing the lives of pastoralists and subsistence farmers of the area while providing new insights to NGO-led self-help rural development initiatives. Through the programme, the villagers are encouraged to organize themselves, to generate capital, to start saving and to learn new skills. They decide their own

priorities on rural roads, irrigation channels, housing and then with AKRSP advice and financial support go about achieving their objectives.

An IUCN project is introducing forestry elements into this programme by establishing village nurseries, testing resilient planting/grazing material, planning for timber and fuelwood needs and providing forestry training, using the same self-help approach.

The two-year project is funded by NORAD at a cost of SFr 400,000.

Working with the high profile AKRSP as a partner in the field is not only enhancing IUCN's reputation as a serious practitioner of sustainable development, but also provides IUCN with an excellent opportunity to demonstrate the link between sustainable livelihoods and sustainable resource management.

Forest alarm for Sri Lanka

Alarmed by the rapid depletion of forest cover in Sri Lanka, government and non-governmental agencies have sought IUCN assistance in managing the country's critical forest ecosystems. The objective is to protect the forests as reservoirs of genetic diversity while allowing the surrounding communities access to forest products.

The Sinharaja forest, 113,000 sq km with a very high degree of endemism, is a wet and humid evergreen forest declared as a Man and Biosphere reserve in 1978 and listed as a World Heritage Site in 1988. The Knuckles is a range of forested mountains of 182,000 sq km peaking at around 2000 metres with a montane evergreen type of vegetation that includes some unique dwarf forest.

Through the Sinharaja and Knuckles conservation projects, IUCN is now assisting the Forest Department of Sri Lanka to implement progressive forest management plans in these critical ecosystems, with the involvement of local institutions and communities.

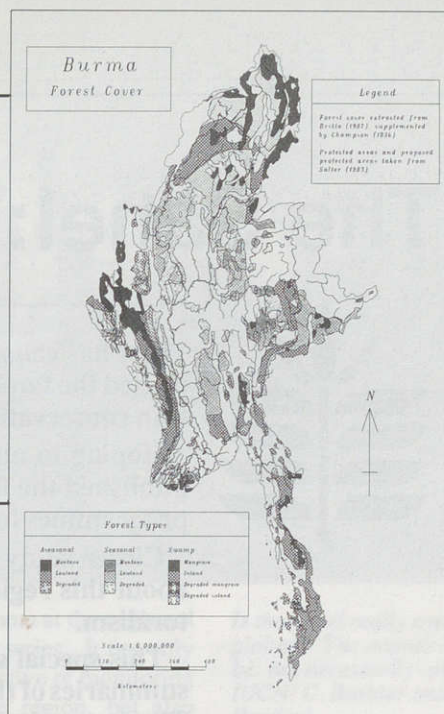


Progressive management is on the way for Sri Lanka's Sinharaja forest (photo: WWF/M. Rautkari).

Critical sites for biodiversity conservation

Most of the world's species occur in tropical moist forests, but they are far from evenly distributed throughout this biome. As increased population pressure in the tropics inevitably leads to further reductions in tropical forest cover and the fragmentation and isolation of the few remaining areas of natural forest, great care must be taken in the selection of sites to be protected. The use of criteria such as high species concentration, diversity and endemism can help ensure that an optimal number of species survive into the next century.

A major focus of the Tropical Forest Programme is to conduct inventories of critical ecosystems according to these criteria. An atlas of tropical forest resources for Asia and the Pacific is now being produced (see example for Burma at right), and studies by a number of African countries have enabled IUCN to produce maps of their critical ecosystems.



South Asia: protecting coastal areas

A system plan for coastal and marine protected areas of Pakistan, India, Maldives, Sri Lanka and Bangladesh will be produced under a project just launched by IUCN's Marine Programme and the UNEP Oceans and Coastal Areas Programme, with the help of the South Asian Cooperative Environment Programme (SACEP).

As a first step, a workshop is planned for later this year to review information on marine ecosystems and species requiring special protection and the status of existing coastal and marine protected areas.

The background material for the workshop is being prepared by national consultants with the help of the IUCN-supported World Conservation Monitoring Centre (WCMC) in Cambridge (UK) and Sue Wells, editor of the three-volume *Directory of Coral Reefs of the World* published in 1988/89.

It is hoped that these efforts will also prepare the groundwork for a draft protocol on South Asia's coastal protected areas and marine species.

Nepal's NCS process

The National Conservation Strategy (NCS) for Nepal, developed by the Government of Nepal in collaboration with IUCN, is as much a process as it is a product. The Union is now continuing this collaboration by providing assistance to Nepal in association with the Swiss Development Cooperation in implementing the recommendations of the NCS. For this a NCS Phase III project was initiated in June 1989 (the NCS was the product of Phases I and II).

Implementation of the NCS for Nepal – the single most important element in the whole NCS process – will be accomplished in a variety of ways. The government has the largest single role, while the non-governmental agencies and the private sector including individual farmers are part of the implementation process. Priorities for implementation will be based on the 80

resolutions of the Conservation Action Agenda (CAA) of the NCS.

Shifting cultivation in Laos

A traditional farming system referred to as "shifting cultivation", "slash and burn agriculture" or "swidden farming" is a wide-spread system of land use. More than 300 million subsistence farmers throughout the tropical world practise shifting cultivation with devastating and often irreversible impact on the environment.

It is estimated that deforestation in the Asia-Pacific region during 1976-80 was about 1.8 million hectares – i.e. 1000 hectares per day. In Papua New Guinea, shifting cultivation is believed to have resulted in the conversion of 3-4 million hectares of forest into unproductive grassland. In Sarawak (Malaysia) an estimated 30,000 hectares of forest are destroyed annually, resulting in a net revenue loss of US\$300 million.

The extent of the primary forest lost in Laos has been estimated at 200,000-300,000 hectares per year, added to the three million hectares believed to have been destroyed in the past. Should the

present rate of deforestation continue unchecked, Laos would lose all its 11 million hectares of forest cover in another 36 years. If we assume US\$3000 to be the average value of timber in one hectare of forest, this represents approximately US\$900 million.

IUCN has launched a project to address the problems of shifting cultivation in Laos in collaboration with the Swedish International Development Authority (SIDA) and the Lao People's Democratic Republic. Through a basic "restoration ecology" approach, IUCN hopes to initiate a series of progressive forestry and agronomic practices aimed at arresting adverse ecological consequences of shifting cultivation while providing alternative means of nutrition, employment and income for shifting cultivators.

The first phase of the project is located in the ancient capital of Luang Prabang, and will include a series of pilot activities aimed at identifying available options. □



Secondary forest surrounds upland rice fields in Luang Prabang province, Laos (photo: IUCN/Vitus Fernando).

The Sahel: facts and fallacies



What has caused the recent droughts in the Sahel and Horn of Africa? Have they alone caused the famines, or are other factors at work? What role does population growth play? Can conservation make a difference?

Hoping to answer some of these questions, the IUCN Sahel Programme has recently published the first in a series of reports aimed at helping development planners put their programmes for the drought-prone region on a sound scientific basis.

Closer study of the realities of the Sahel has begun to demolish some cherished myths about this region with regard to rainfall, food production, population growth and pastoralism.

This special section on the Sahel introduces the IUCN Sahel Programme, and presents summaries of the major findings of *The IUCN Sahel Studies, 1989*, by its principal authors. There are also reports from two of the Programme's most active projects, in Mali and Niger, and papers by Sahelians themselves offering a perspective from within the region.

The Sahel Programme

According to the 1988 Development Report of the World Bank, the countries of the Sahel and the Horn of Africa are, with the possible exception of Djibouti, among the poorest in the world.

The same report notes that in 1986 the development aid these countries received *per capita* was higher than the average for other developing countries. In

1986 each of these countries received from US\$165 to 650 million – anywhere from 11% to 27% of their GNP.

And, according to an IUCN analysis of recent UNDP Development Assistance Reports, there are currently about 4500 projects in the Sahel being supported by something like 180 development assistance organizations.

Why another programme?

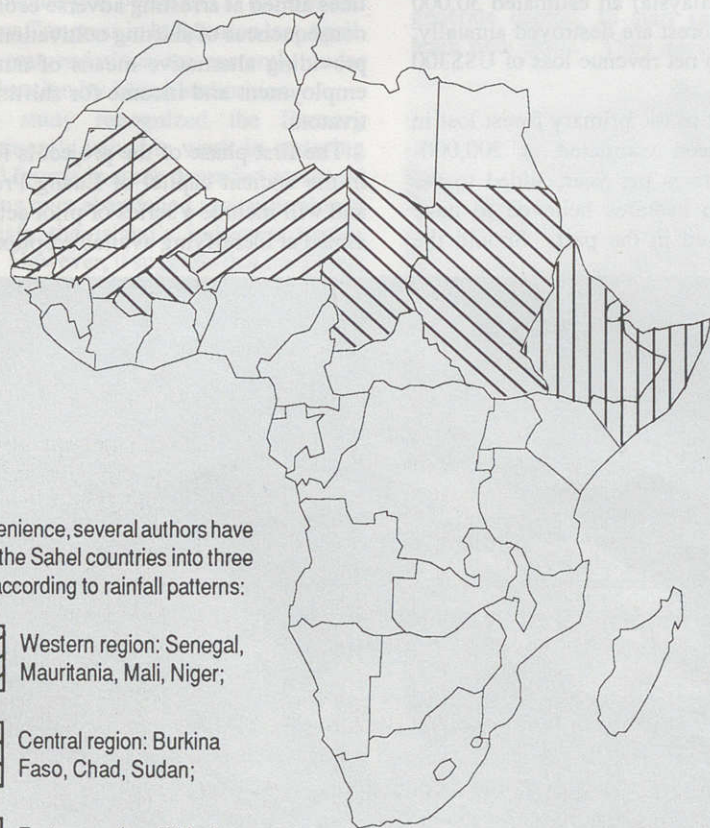
Against this background one might wonder what yet another agency could do in the Sahel that could possibly be of benefit to its people? It would certainly not be by adding a few more dollars to the millions already going there, or a few more projects to the thousands under way.

And yet, it seemed impossible to stand idly by once it became clear that the drought in the Sahel and the Horn of Africa was causing a dramatic decline in the ability of the natural ecosystems in these areas to sustain life.

The IUCN General Assembly, meeting in 1984 in Madrid, adopted a Resolution expressing "deep alarm" at the situation. In response, the IUCN Secretariat set up a task force which in 1986 published a plan for the Sahelian countries entitled "The IUCN Sahel Report – A Long-Term Strategy for Environmental Rehabilitation".

During the second half of 1987 a Sahel Coordination Unit was established at IUCN Headquarters in Gland, Switzerland, with support from Denmark, Finland, Norway and Sweden. The IUCN Sahel Programme became operational in early 1988, with publication of a Policy and Programme Declaration.

Initial support to the Sahel Programme from the Nordic countries is about SFr 3 million per year over a three-year period. Other contributions have come from IUCN projects previously under way which have been incorporated into the Programme. With an annual budget of around SFr 6 million, the Sahel Programme is now the largest of IUCN's field programmes.



For convenience, several authors have grouped the Sahel countries into three regions according to rainfall patterns:

-  Western region: Senegal, Mauritania, Mali, Niger;
-  Central region: Burkina Faso, Chad, Sudan;
-  Eastern region: Ethiopia, Somalia, Djibouti.

Objectives

IUCN has tried to define objectives for its Sahel Programme that correspond to both the mandate of the Union and to the needs of Sahelians. Rather than start completely from scratch, it has tried to find a niche for its activities that makes them complementary to efforts already under way in the region. It has also tried to make sure that the components of its own work support and complement one another, so that their sum is greater than the many parts.

According to the Policy and Programme Declaration, the Sahel Programme's objectives are:

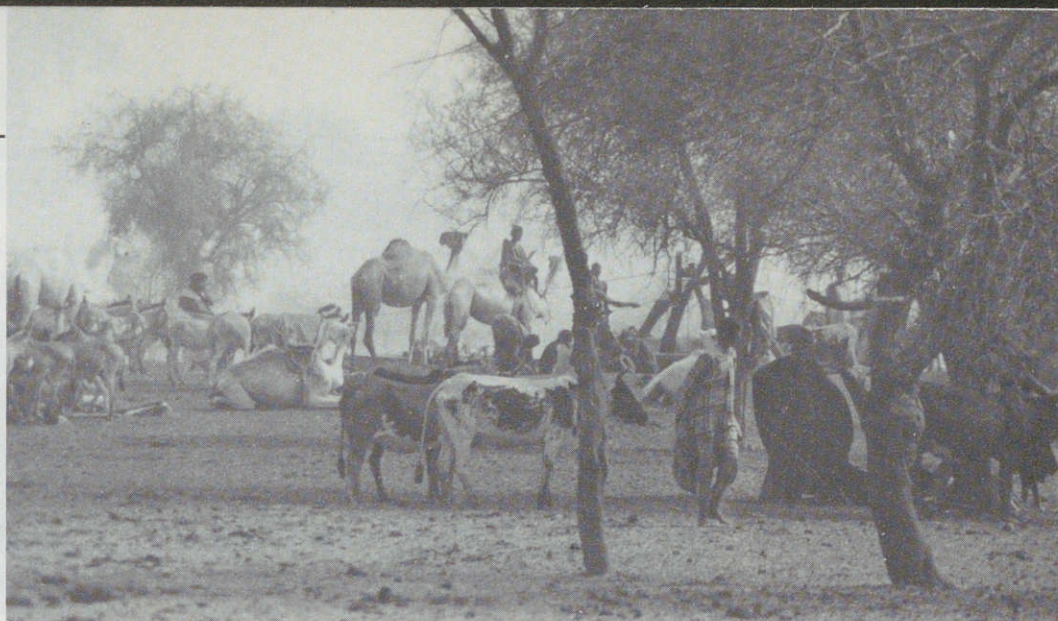
- to develop ways to manage living natural resources that better correspond to prevailing climatic conditions and which permit sustainable development,
- to help preserve the biological diversity of the Sahel, and
- to monitor the changes taking place in the region.

Multi-level Involvement

Stating these objectives is easy; achieving them requires engaging people and institutions at the local, national and regional levels, in activities ranging from the abstract to the concrete – from strategic, policy-level interventions to institution-building through training, public awareness programmes, and work with local NGOs on grassroots projects at the village level.

At the **local level**, a number of demonstration projects will test new ideas about managing natural resources more efficiently as a growing population tries to survive on ever-shrinking resources.

At the **national level**, the Programme will assist countries to develop National Conservation Strategies for sustainable use of the natural resource base. Participation in the NCS process should help enable government institutions to collect, monitor, assess and use environmental data in their own development planning. To date, IUCN has been invited by the Governments of Ethiopia, Chad and Somalia to assist in initiating an NCS.



The cornerstone of the Programme at the **regional level** is *The IUCN Sahel Studies* series. It not only answers to the Programme's objective of monitoring the changes taking place in the region, but also provides a forum for review and analysis of some often controversial issues.

The IUCN Sahel Studies, 1989

A number of organizations and individuals with wide experience in the Sahel were asked to contribute to the first report in the series, which is more of a background document than a report of project results: the volume reviews and analyses the recent literature on the region's climate, population growth, food production, conservation areas, agricultural prices and natural resources management, sustainable development, land tenure and pastoral resource conservation. Some of its findings were unexpected, and have caused us to re-examine our assumptions about the Sahel's problems and their causes.

The next report is due to be published in connection with the IUCN General Assembly in late 1990 or early 1991.

With *The Sahel Studies*, IUCN hopes to ensure that its work in the Sahel is based on the best possible scientific analysis of Sahelian ecosystems and how they are used by people. Its findings may prompt researchers and economic planners to look more closely at their assumptions about development in other parts of the Third World.

– Per Rydén, Sahel Programme Coordinator

The **Sahel Programme's headquarters** in Gland has a staff of four headed by Programme Coordinator Per Rydén. Address: World Conservation Centre, Avenue du Mont-Blanc, 1196 Gland, Switzerland. Telephone: (41 22) 649 114; Telex: 419 605 iucn ch; Fax: (41 22) 642 926.

The **IUCN Regional Office for Western Africa** in Dakar, Senegal, works on Sahel problems in Francophone Africa. Its staff includes the IUCN Regional Representative, Gérard Sournia, and the Deputy Regional Representative, Camille Pomerleau. Address: B.P. 3215, Dakar, Senegal. Telephone: (221) 328 521; Telex: 3103; Fax: (221) 329 246.

The **IUCN National Office for Mali**, headed by Jean-Michel Bourreau, coordinates programme activities in that country. Address: B.P. 275/DNEF, Bamako, Mali. Telephone: (223) 227 572.

The Sahel Programme is also assisted by the joint **WWF/IUCN Representative in Niger**, John Newby. Address: B.P. 10933, Niamey, Niger. Telephone: (227) 733 338.

The **IUCN Regional Office for Eastern Africa** is located in Nairobi, Kenya, and headed by Regional Representative Dr Robert Mapas. Its staff of 14 includes the Eastern Sahel Unit, headed by Nicholas Winer, which coordinates the programme activities of Anglophone countries of the Sahel. Address: P.O. Box 68200, Nairobi, Kenya. Telephone: (2542) 502 650; Telex: 25190; Fax: (2542) 503 511.

Is the Sahel really overexploited? The answer may be: not necessarily (photo: IUCN/ C. Barbier and D. Perrier).



Per Rydén from Sweden has coordinated the Sahel Programme since 1987.

Wadis in flow in Ouadi Achim, Chad (photo: WWF/John Newby).



Rainfall:

Seeking a clearer picture

Accurate scientific knowledge about rainfall in the Sahel is a pre-condition for sound development planning in the region. Agricultural and pastoral herding communities live in a precarious dependence on the rains. Any substantial water deficit has immediate and potentially disastrous results.

After the extreme drought of 1984, the Food and Agriculture Organization of the United Nations (FAO) listed 22 African countries as experiencing food shortages or shortfalls in October that year. An estimated 250 million people were stricken. All the Sahel countries were affected.

But how abnormal was the drought? Since 1968 the Sahel's western and central regions, from Senegal to Sudan, have received widespread, below-normal rainfall, and have suffered numerous severe droughts. In the entire western half of the Sahel, every seasonal rainfall for the past 20 years has been below par.

In such cases, it is difficult to know just what 'normal' is.

The period 1931-1960 is used as a standard averaging, or base, period in climatology. If, instead, we move this base period to 1958-1987, the deficit in recent years is "reduced", but the period 1920-1970 becomes abnormally wet. From 1992 meteorologists will use 1961-1990 as a base period.

Which picture – 1931-1960 or 1961-1990 – is correct? Both of them. What this comparison shows is that the use of a standard period in the Sahel does not give a total picture. Adjusting the mean statistics does not obviate the reality of recent droughts. What is important to remember is that many texts use the optimistic figures of the 1931-1960 base period.

Can the variations of the past be used to predict how rainfall will vary over the coming years? Will we see continuation of the recent deficits or a return to the wetter 1950s?

The answer for now has to be: we don't know what the future holds. But it is probably best to err on the side of prudence and use the experience of the last 20 years (of rainfall deficits) in planning for the future.

Another misconception obstructing sound policy development comes from media reports that 1988 was a very wet year for the Sahel. There has been a tendency to interpret extreme local rainfall events as evidence of larger-scale patterns and trends. There



A well in Gourma: Mali is one of the countries most affected by drought (photo: IUCN/C. Barbier and D. Perrier).

was in 1988 more rain relative to recent years, but seasonal totals do not reach those of pre-deficit years, such as in the 1950s.

What do we know about the causes of rainfall deficit in the Sahel? Here again, none of the models are totally satisfactory, ranging from human-induced effects to the results of purely physical perturbations in global circulation.

What figures we have caution against easy generalizations: the western countries (Senegal, Mauritania, Mali and Niger) have been most affected by lack of rain. Deficits are less pronounced in the central region (Burkina Faso, Chad and Sudan), while the eastern region (Ethiopia, Somalia and Djibouti) has received highly variable rainfall, with no discernible long-term trends.

There is hope, however, that we will be able to put together a much clearer picture of the future climate of the Sahel. Climate monitoring of the region is making great strides through remote sensing by satellite, a technique which is particularly useful in less populated areas. Detailed analysis is also concentrating on daily rainfall data.

The African Centre for Meteorological Applications and Development is being established in Niamey, Niger. National meteorological agencies and regional centres such as Agromet, Niamey, will be able to improve their data banks and analysis as computing facilities become more available, both inside and outside the region.

— Dr Graham Farmer



Graham Farmer is Senior Research Associate at the Climatic Research Unit, University of East Anglia, UK, which produced the rainfall chapter for The IUCN Sahel Studies, 1989.

Agriculture:

Food for thought

Widespread drought and famine, dislocation of food supplies through civil strife, plagues of locusts, extensive livestock overgrazing, emergency food aid programmes – the headlines from the Sahel in recent years have helped create an impression of an agricultural production system under extreme stress and in process of degeneration.

But the popular image of Sahel rangelands as verging on collapse from drought and overgrazing is not borne out by the data. Since 1963 livestock populations have increased in all regions – doubling in the central region, expanding by 22% in the western region and growing by 20% in the eastern region.

Nor has agricultural and cereal production slumped over the past 20 years. It has steadily increased, even during a long-term pattern of below average rainfalls and declining available soil moisture.

Production has grown not just because farmers have planted more hectares, though that is the primary reason. Real gains in yields have also been made in the Sahel. Even in the worst drought years, throughout the Sahel there were significant surpluses from agricultural trade – up to 1980.

Each region appears to be producing more food than it is consuming. The populations do not seem to be suffering a declining standard of nutrition.

Agricultural production throughout the Sahel is much more robust than is widely realized. The first of the Sahel Studies has found no evidence that climatic conditions in the Sahel are the reason for the region's often critical food problems during the decade. The causes of the Sahel's recent famines include difficulties with food transport to deficit areas, poverty, wars and high population growth.

In spite of the years of drought, the eastern and western regions of the Sahel achieved substantial gains in production from 1961 to 1987, while the central region increased the gross value of its agricultural production (GVP) by 79% and cereal production by 70% as well as the 100% increase in livestock.

During this period, the cultivated area increased only 26% in the central region. The major increase in GVP is apparently due to improved farming techniques and increased production per labourer. In the eastern Sahel, which has 50% of the population, cultivated lands were extended by only 16% compared with a 39% growth in GVP. Output per head has increased dramatically there since 1975.

It is in the western Sahel that productivity per agricultural worker has declined. Cultivated land has expanded by 33%, nearly as much as the 37% rise in GVP. It appears that growing conditions in the western Sahel are largely so variable and unreliable as to make it risky to adopt new technologies and methods.

Nevertheless, 1988 saw bumper harvests throughout the Sahel. The information we have does not support the common belief that agricultural systems in the Sahel are near collapse.

The argument has been made that cash crops for export reduce food production and increase the risk

of famine. It gained a lot of support in the mid 1980s. During the Ethiopian famine melons were exported as an export revenue earner while millions of Ethiopians faced starvation. The truth was somewhat different, as a researcher underlined with the now much-quoted words: "A general shortage of food is hardly ever the cause of famines. Famines are caused by the poverty of (the) victims: they are unable to purchase the food that is available."

What is the food problem in the Sahel?

Although there have been major increases in production in the last two decades, this has still not been enough to keep up with the increase in population, which has been growing at rates (2.4-2.8%) which double the numbers every 25-30 years. Only in the central region has the rise in agricultural production outpaced population growth. All three regions are now net food importers. In the 1960s they were all net food exporters.

The low population density – less than 10 per sq km in six of the nine countries covered in the report – has led many people to imagine that the growing population has only to move into uninhabited areas.

This statistic is misleading. Much of the land is not suited for human habitation, much less cultivation. If you look at the population on arable and irrigated land, only two Sahelian countries contain fewer than 100 people per sq km.

So far, agricultural pricing seems to have a minimal effect on production in the Sahel. According to one study, a 1% general price increase led to a 0.54% rise in output in Senegal and only 0.24% more output in Burkina Faso. The low response has been attributed to difficulties in many African countries of mobilizing additional resources of land, labour, fertilizer, etc.

Today, no region of the Sahel is self-sufficient in food, although all were in the recent past. But food consumption per head, measured as dietary energy supply, has remained constant in all three regions. The difference is made up by food imports.

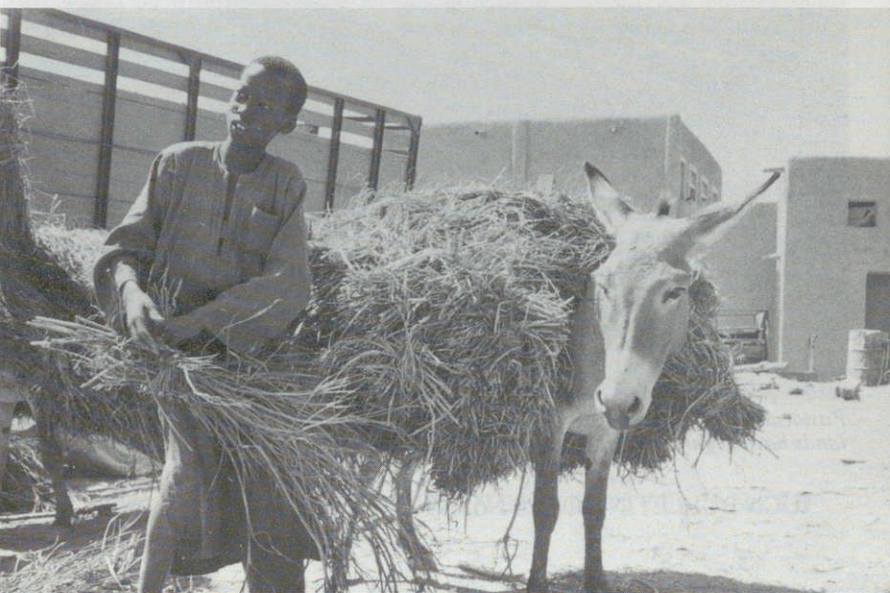
In the central and western regions, food aid accounts for nearly 90% of all food imports, and 12% of the total food supply. However, the western region – which has seen a minerals boom – is much less dependent on agriculture today than in the 1960s.

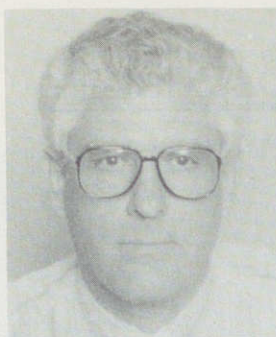
Agriculture, 90% of exports 30 years ago, now accounts for only 30% of foreign currency earnings. In the central and eastern regions, agriculture still produces nine-tenths of all exports, and in the eastern region, agricultural products have risen from 10% in



A Stone Age grinding stone lies in what is now desert in Adrar Madet, Niger (photo: WWF/John Newby).

Food production has risen in most of the Sahel, but population has grown even faster (photo: IUCN/ Monique Trudel).





Michael Norton-Griffiths, formerly head of IUCN's Eastern Sahel Unit, edited *The IUCN Sahel Studies*, 1989.

the 1960s to 30% of all imports, though only about one third of food imports come as aid.

What are the chances that the Sahel countries can become self-sufficient in producing food?

Improved agricultural technologies and soil conservation measures could probably make Burkina Faso, Senegal and Sudan minimally self-sufficient. Chad and Ethiopia might be able to achieve large increases in production.

But perhaps that is the wrong question. Our studies indicate that food self-sufficiency probably cannot be

achieved by most countries. But a country may well be more secure by producing a mixture of cash crops and food crops. The cash crops will provide income to purchase food imports as needs arise.

— Dr Michael Norton-Griffiths

The Food and Agricultural Production chapter of the Sahel Studies was produced with the assistance of the Food and Agriculture Organization of the United Nations (FAO).

Pastoral rights and wrongs

Pastoral land tenure is at the heart of any system of ecologically-sustainable land use in the dry belt of Africa.

Experience so far in trying to find a workable system has been bleak. Inappropriate land tenure concepts have been imposed from above, creating situations in which poor people have been progressively excluded from resources, production has not increased, and the environment has not been conserved.

In the dry belt of Africa, the State has entered the game of managing common property resources as a major participant, pursuing a set of interests that are often not directly related to conservation or to equitable development. There has been a rapid evolution in two opposed directions: in some areas a privatization of former commons; in others, the destruction of customary rules governing use of common resources without a new workable system to replace them. In the latter case, a "tragedy of the commons"—degradation of the environment through exploitation of common resources for maximum short-term individual gains—is effectively the result of access and control

rules which respect neither the interests of resource conservation or those of resource users and managers (local populations).

Recent research in social anthropology and geography has shown that traditional resource tenure rules are much more sophisticated in many rural societies in farming, fishing and herding economies than has previously been recognised. In the Macina area of the inner Niger delta in Mali, a traditional set of rules not only regulates land use, but covers the entire organization of the pastoral economy and its relationship to the agricultural economy.

The result of this highly organized integration of pastoralism and agriculture can be judged by the fact that overall population density in the inner Niger delta is several times larger than in the smaller but ecologically similar Senegal river flood plain, where agriculture and pastoralism traditionally coexisted without comparable institutions to regulate their interaction.

Although threatened by increased cultivation of pastures and along transhumance routes, by reduced respect of traditional rules, by the rapidly increasing influence of government, outsiders and a few wealthy families, and by the increasing privatization of some resources, the system which arose in the early 19th century still largely regulates at least the form of pastoral land use in the inner Niger delta.

We should not be carried away by enthusiasm for such traditional land tenure systems, and suppose that all that is needed for resource conservation is simply to reinstate them. Most such systems are now in decline, as a result both of internal and external pressures. Governments tend to deny legitimacy to these traditional systems and have generally legislated a different approach.

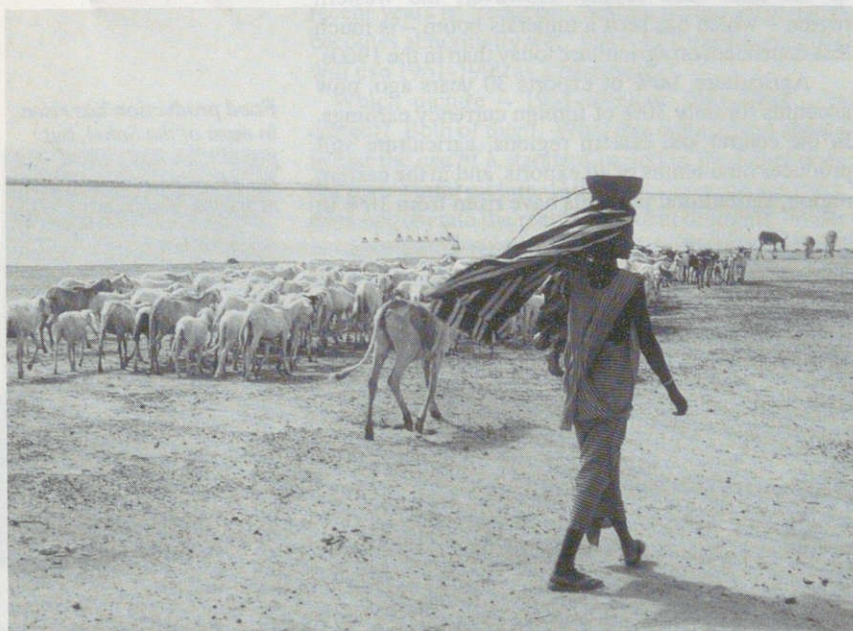
Traditional rules are also limited in their usefulness because in general, at least so far as pasture is concerned, they do not include procedures for negotiating grazing limitations within small groups.

A new strategy based on traditional practice faces many unresolved problems. But it has the virtue of starting from where most herders now are rather than from an idealized vision of European or North American resource tenure systems. It seems likely to be the only successful way forward in resolving pastoral land tenure constraints in a way which achieves generally accepted objectives of equity, production efficiency and environmental sustainability.

However, it would be wrong to suppose there to be a single traditional model of tenure: there are many models and many local situations. Any attempt to improve pastoral land tenure must accept this diversity and work from it.



IUCN/C. Barbier and D. Perrier



Pastoralism vs. agriculture: in much of the Sahel, traditions regulating use of common lands have degenerated (photo: IUCN/Roger Michel).

Actions which could improve the system include:

- broadening the concept of land tenure and common resource management systems;
- decentralizing tenure systems;
- defining collective rights holders;
- negotiating grazing control within local community pastures;
- reciprocal access agreements;
- protecting the tenure rights of poor people and women;
- preserving flexibility; and
- finding better accepted ways of enforcement.

At present, pastoral tenure rules are enforced through the local courts, or by decision of the local administrative authority or police. This is often unsatisfactory since the rules effectively governing pasture use are frequently an uncoded mix of traditional and modern rules not susceptible to court interpretation, the court or the administrator may be ignorant of traditional rules, and court members or authority may have an interest in the outcome. Pastoralists, especially poor pastoralists, often do not understand the legal proceedings, which may take place without them. Actions by the police or forest service to enforce rules in many cases make the problem worse.

Critical masses

Population growth rates throughout all of sub-Saharan Africa are the highest in the world. Having grown from 47 million to 91 million between 1950 and 1980, the population of the Sahel today is increasing by around 2.8% a year. This rate, producing a doubling of populations every 25 years, is itself increasing. It is expected to peak in the early years of the next decade.

This means that the population of the Sahel is forecast to total 159 million by the turn of the century and 263 million by 2020.

Even if we could suddenly persuade everyone in the Sahel to adopt policies of zero population growth – in which fertility rates are brought down to replacement levels – the population increase would continue well into the next century.

This is because 45% of the population today is under the age of 15. These people are now reaching reproductive age in increasing numbers.

This demographic momentum has profound social consequences. In many countries, governments simply cannot keep up with the demand for food, clothing, shelter, health care, education and employment. It is impossible for authorities to generate enough wealth from their own economies to pay for such services.

The under-15s are generally not yet economically active. So the rest of the populace has to provide for them.

When the young people do try to enter the labour market, they face intense competition from the huge numbers of others of their age who are likewise looking for work.

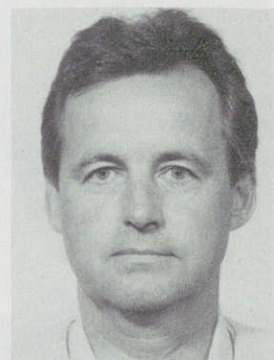
The population explosion has occurred because birth rates have remained high since the 1950s while

A decentralization of tenure systems also implies decentralization of the procedures to resolve local level conflicts and to enforce decisions.

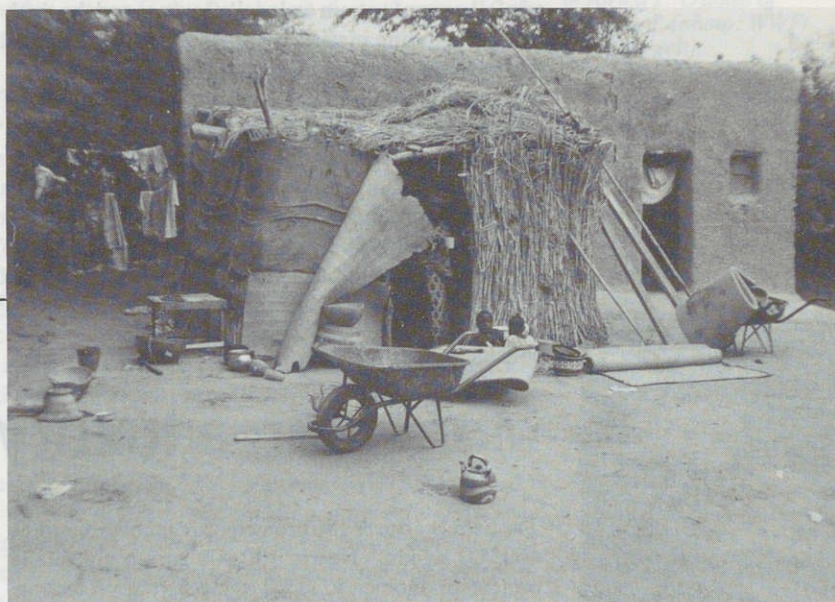
Where the local administrative structure is based on the traditional social structure, as in Sudan, traditional courts may be able to take decisions of this sort, and enforce them through peer group pressure to conform, with perhaps the threat of limitation or withholding of the benefits of group membership. If this fails, the offender can be expelled from the group.

Where traditional courts no longer exist, it may be necessary to create new local courts of first resort for land tenure problems, where representative officers from local herders' organizations and local government can reach decisions.

– Dr Jeremy Swift



Jeremy Swift is Research Fellow at the Institute of Development Studies, University of Sussex, Brighton, U.K.



vaccination programmes, antibiotics, rehydration therapy and anti-malarial drugs have helped create a rapid decline in the deaths of infants and under-fives. In 30 years the Sahel has achieved a reduction in death rates that took 100 years in Sweden, to cite a country for which we have reliable statistics. Small wonder that social attitudes towards fertility have not had time to change.

As is found in many countries, the cities of the Sahel are growing faster than rural areas. In some parts, more than half the country's city-dwellers live in the capital.

It would be wrong to ascribe all this growth to rural-urban migration. In the Sahel, most of the increase in urban populations results from childbirth. Since urban populations have better access to public health care, their death rates have declined faster. The result is persistently high fertility rates and great demographic momentum in the cities.

Apart from rural-urban migration, the Sahel sees three major movements of people:

– **International migration:** now primarily migrants from the Eastern Sahel to Arab countries of the Gulf. In 1980 there were 165,000 Somali workers outside their home country and about 500,000 Sudanese working abroad. Until new immigration restrictions were introduced, international movements were important elsewhere in the Sahel. ⇐

A rapid decline in death rates has contributed to a population explosion in the Sahel, and left women little time to adjust their attitudes toward family size (photo: IUCN/Roger Michel).



Pietronella van den Oever is Head of the IUCN Programme on Population and Natural Resources.

– **Seasonal migration**, particularly during the growing season, but also to cities. These movements may be the first step to permanent migration.

– **Rural-rural migration**: pastoralists and farmers moving to areas with better rains. Government-sponsored resettlement, such as Ethiopia's which moved nearly 350,000 people in 1984-85, are also of this type.

Migration often means that people must learn an entirely new way of life – new farming methods, new skills, new habits.

Since men make up most of the migrants, this leaves the women often alone to cultivate the land in rural areas. Up to 50% of the male population may move away, as population censuses confirm: there are usually more men than women in urban areas and more women than men in rural areas.

Migrating farmers in search of land with adequate rainfall can put a strain on local resources and the earth by concentrating in particular regions, as seen in Mali where farmers have gathered in zones where rainfall is at least 800 mm a year.

Problems also arise because of the rural-urban 'brain drain': educated young people from rural areas settle permanently in cities, when their minds and skills are needed back home. They would be the best qualified to start using new and more productive tech-

niques, as well as understanding the importance of means of protecting the environment. Senegal is trying to slow the brain drain by launching a rural economy recovery programme designed to reduce income disparities between rural and urban areas.

Senegal is also the only country in the Sahel to have an official National Population Policy. Very few governments have programmes aimed at reducing fertility rates: most of the efforts go into reducing mortality. But most countries do offer family planning help in the context of maternal and child health care programmes or through non-governmental health centres.

Many Sahelian countries have adopted a forward-looking approach to women's issues. Senegal is here another pioneer: its Plan of Action for Women is aimed at women's liberation in all areas: economic, social and cultural. And the planners clearly see that one of the main effects of the programme will be to help control fertility.

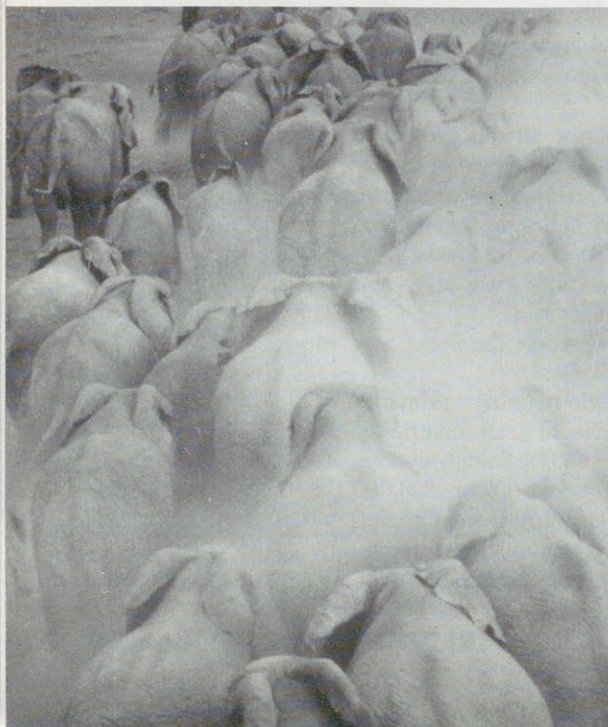
– Dr Pietronella van den Oever

The chapter on population growth and movements for The IUCN Sahel Studies, 1989, was commissioned from the Population Reference Bureau in Washington, DC (USA).



Great white pelicans in Djoudj National Park in Senegal (photo: WWF/ Claude Charlet).

Elephants in Gourma: do they compete for scarce resources? (photo: IUCN/ C. Barbier and D. Perrier).



Protected Areas:

More than a luxury

The Sahel has over 180 protected areas covering some 460,000 sq km. Nearly 130,000 sq km are totally protected; another 327,000 enjoy partial protection. This amounts to 5% of the Sahel's land area.

At a time when increasing agricultural production is a regional priority, are these seemingly non-productive areas justified?

We can identify at least seven roles for protected areas:

1. **They preserve genetic resources.** The Sahel and other arid or semi-arid zones have many plants interesting to researchers for their tolerance of drought, heat or salt. Other plants produce novel toxins when under environmental stress, and some of these compounds are active against cancers. These plant species also represent small and isolated families with highly divergent biochemistries, leading to exceptionally distinctive chemicals for use in industry.
2. **They provide opportunity for research.** Through ecological research within protected

areas we can learn about how ecosystems function. By studying the processes of regeneration of indigenous species, we can also learn how to conserve and use them. Esoteric as this may sound, in the long run these aspects may prove some of the most significant functions of protected areas.

3. **They offer scope for tourism and education, and associated employment.** Southern Sudan, for example, built up a thriving sport-hunting industry in the 1970s.

4. **They conserve renewable and harvestable resources.** Local communities may make substantial use of many plants – for fruit, roots, building poles, ropes, household medicines, utensils, etc. There is also potential in the Sahel for harvesting 'wild meat' on a sustainable basis from antelopes and other ungulates adapted to life in arid lands. Defending the nesting beaches of turtles can help maintain harvestable populations outside the protected zones. Similarly, many fish and shrimp populations benefit from protection of mangroves, where the juveniles live. There are a number of wetlands in the Sahel which are important as sources of water for people, livestock and wildlife. There are flourishing fisheries in the Lake Chad basin (115,000 tonnes were caught in 1980) and the inner delta of the Niger in Mali (100,000 tonnes in 1980).

5. **They stabilize water runoff from watershed systems.** In Ethiopia, the Simen Mountain National Park with its forests supplies domestic water for human communities in the highlands and upper lowlands. Deforestation could jeopardize this function.

6. **They protect soils.** In the Ethiopian highlands it is estimated that soil erosion from 9 million ha of farmland causes the loss of at least one billion tonnes of topsoil per year. Protected areas in the highlands, covering some 400,000 ha (4.4% of the area of

farmlands) prevent all but background erosion and help contain the problem in critical areas.

7. They may contribute to climatic stability through maintenance of natural vegetation cover. We suspect changes in vegetation may well contribute to climate changes.

In the face of crisis, it is tempting for governments to relegate protected areas to the category of unaffordable luxury. Fortunately, the countries of the Sahel have kept in mind their nations' long-term needs as they have tackled their immediate problems. Indeed, there has been a fast-growing awareness of the need to conserve the Sahel's resource base and of the contribution that protected areas can make to the sustainable development of the region.

For example, all Sahel countries have signed the 1968 African Convention on the Conservation of Nature and Natural Resources. (Chad, Ethiopia, Mali and Mauritania have yet to ratify it.) Three types of protected areas are defined under the Convention, and these have been adopted by State Parties under a variety of names: strict nature reserve (total protection), national park (conservation of all wildlife for the benefit of the public), and special reserve (conservation of characteristic wildlife, with some human activities permitted). The Convention emphasises the need for both protected areas and special conservation measures for certain species.

In addition, all states apart from Chad, Djibouti and Somalia have adopted at least one of the three international instruments concerned with the conservation of internationally important natural areas, namely the Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972 (World Heritage Convention), Unesco Man and Biosphere Programme, and the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention).

At the national level, there are large discrepancies among Sahel countries regarding the amount of land placed under protected status. Moreover, not all protected natural sites in the Sahel conform to international criteria for protected areas. For example, only Burkina Faso (with 10% of national territory under protected status), Chad (with 10%) and Senegal (with 21%) have met the target of 10% of total land area – recommended by UNEP as a minimum to curb the trend towards species depletion (quite apart from other functions). In all other countries, except Niger (with 7%), protected areas coverage remains well below 5% and is particularly low in the case of Djibouti and Somalia, with less than 1%.

Although largely sparse and impoverished, the Sahel features 35% of the 80 "vegetation types" commonly recognised in Africa. Predominant are woodland (1.3 million sq km), wooded grassland/deciduous bushland (1 million sq km), grassland/shrubland (1.8 million sq km), and edaphic grassland – grassland determined primarily by soil factors (370,000 sq km). Somalia, Ethiopia and Sudan also contain 850,000 sq km of Somalia-Masai bushland. Most of these vegetation types are well-represented

in protected areas, except for edaphic grasslands. The highly specialized Saharamontane vegetation, 61% of which occurs in the Sahel, and the various types of desert vegetation, are also virtually unprotected.

The Sahel contains several areas with distinctive floras of shared origin, known technically as "phytochoria" and less technically as "cradles of evolution". The Afromontane phytochorion, which is represented in the Simen Mountain National Park of Ethiopia (now abandoned for security reasons), features 4000 plant species, of which 75% are endemic (i.e., occur nowhere else). Somalia, with 20 genera endemic to the country, is also an important centre of endemism. Northern Somalia is of particular botanical importance, because of its distinct drought-resistant succulents, but none of it has protected area status as yet.

There are many other pools of genetic and biological potential in the Sahel which are so far unprotected.

Faunal diversity and endemism are relatively low in the Sahel, except for Ethiopia and Somalia. The most important areas for conservation of endemic animal species are the National Parks of Ethiopia's Bale Mountains and Simen Mountains. There are also important protected areas in other Sahel countries, the most serious gap in the conservation of fauna being the lack of adequate protected area coverage in Somalia.

Some of the most serious effects of development will be witnessed in the Sahel's wetlands. There are major projects for dams on the Senegal River system and a 360 km canal is under construction in the Sudd swamps in southern Sudan. Both these will have far-reaching consequences for human communities and livestock as well as wildlife.

Is there great support for conservation in the Sahel?

The importance of the Sahel's protected areas to the individual countries, the region and the world is increasingly recognised. It helps that a new approach to development is evolving which allows planners to put an economic value on the environment – a "new science" which combines economic and ecological approaches to development and natural resource use.

As the report states, "the view of protected areas as a luxury, irrelevant to development, is fading fast, yet the pressure to exploit protected areas to meet urgent short-term needs is increasing. IUCN aims to help the region to review and revitalize its protected area network as one part of its effort to secure sustainable long-term development."

– Dr Michael Green



Ethiopia's Simen Mountain National Park is one of Africa's "cradles of evolution" (photo: WWF/B. Nievergelt).



Michael Green is on the staff of the World Conservation Monitoring Centre (Cambridge, U.K.), which prepared the chapter "Conservation Areas" in The IUCN Sahel Studies.

The Air Project in Niger

Island of hope

With an area over three times that of Switzerland, Niger's Air Massif is an island in the largest aridland on earth – the Sahara. Not only physically an island, with its granitic and volcanic peaks rising to over 2000 metres, but ecologically an island too. With its mixture of mountains, valleys and fringing lowlands, the Air is composed of a wide range of aridland habitats, supporting a surprising variety of plants and animals. Vegetation ranges from steppe-like prairies of grasses and shrubs, through well-wooded wadis to some astonishing micro-habitats, in areas of permanent water, supporting reeds, bulrushes and water lilies. The region's fauna is as rich and diverse as any in the aridlands of North and West Africa today and boasts species typical of the Sahel, such as the dorcas gazelle, cheetah and ostrich, and of the Sahara with the addax and the Barbary sheep.

For the Air's Tuareg inhabitants it is also an island; an oasis, providing them shelter, pasture, water and soil, for their settlements, their livestock and the small gardens they irrigate. Like the other great Saharan massifs, Tibesti, Tasilli, Hoggar, Adrar-n-Iforhas, the Air is special – singular not only by the diversity of its resources or of its relief but by stark comparison to the flat and hostile, sand-swept plains that surround it.

Over the past two decades, drought has been the major cause of loss of biological diversity, the disappearance of productive land and the disruption of the fragile, natural resource-based economies of Sahelian peoples. With few or no alternatives, prolonged drought forces nomads to eat further and further into the biological capital of pastures and woody vegetation that make up their emergency resources in times of need. Under the dual assaults of drought and the axe, trees and shrubs lose their resilience and die. Farmers, deprived of rain, see their crops wither and their wells run dry.

Relatively sheltered, better watered, more wooded, less populated less accessible, the Air has escaped, or perhaps better supported, the effects of the drought and accompanying desertification that have afflicted the Sahel in recent years. Relatively speaking that is, for the Air is also under threat, and with it the livelihood of its pastoral and agricultural peoples. Like an amoeba engulfing its prey, the Sahara is rapidly isolating the Air from surrounding Sahelian habitats. As the prevailing winds persuade sand further and further into its valleys, suffocating pastures and literally overwhelming trees and shrubs in a rolling swell of dunes, attrition of the Air's vital resources is taking place.

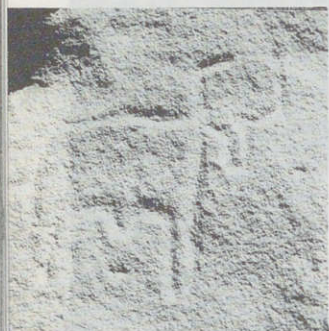
In 1979, when a joint mission organized by the Niger Government, WWF, IUCN and the Zoological Society of London visited the Air, it was struck by the richness of its resources. In spite of the obvious signs of drought and overuse, both vegetation and wildlife gave hope for better things to come. The area's potential for tourism was also evident, with magnificent desert scenery and a wealth of prehistoric and cultural remains spanning some 60,000 years of human occupation. Although their broadly-based economy of herding, gardening and caravan trading had been badly hit by the drought, the Tuareg were nonetheless hopefully reconstructing their lives and seemed far from daunted by the prospects of further problems.

Over the next two years, a comprehensive survey of the Air was carried out and presented to the Niger Government with a view to obtaining support for a broadly-based conservation project. This acquired, WWF and IUCN provided funds to launch a programme that is now entering its ninth year, and has attracted interest, support and admiration from a large number of international and non-governmental organizations. In a significant way, the evolution over the years of the Air project has mirrored, and perhaps even influenced the recent development and philosophy of conservation. From somewhat humble beginnings as a project geared to the protection of endangered natural resources, a programme has developed that encompasses not only protection but also land management and human development.

Inextricably related, species conservation in the Third World must take into account land use, human survival and the aspirations of people for themselves and for their progeny or be forever a lost cause. The problem facing the Sahel and the development community in general, is how to reconcile human progress with the conservation of the very resources upon which progress and the attainment of a better quality of life depend. The Air project is an attempt to answer this dilemma.

Project operations follow three main objectives: the conservation of the Air's increasingly unique natural resources (fauna, flora, tourist assets); the rehabilitation, where possible, of degraded or threatened land and habitats; and the fostering of rural development techniques that best respond to local needs and the ability of the people to practise and generate them.

Key to the whole approach has been the establishment of a vast protected area, the Air and Ténéré National Nature Reserve. The reserve provides the logical, physical and legislative framework necessary for activities to respond to specific problems, in a



A wall carving in the Air Mountains suggests that cattle have been raised here for at least 2000 years (photo: WWF/Hartmut Jungius).

This seasonal wadi is still rich in vegetation; but the Air is beginning to show the effects of drought (photo: WWF/John Newby).



specific context and in a specific way. It has created a focal point for local, national and international pride and interest. It is rapidly becoming an important tourist venue and as such could generate alternative forms of employment and income for the local people.

Although drought and desertification are ever present threats, efforts are under way to rehabilitate degraded lands. Valleys are reseeded with grasses and reforestation work is taking place. Wildlife is catered for by the establishment of strict nature reserves and a reintroduction programme is under development for the addax antelope. As with the rehabilitation work, emphasis in rural development is being placed on an experimental and participative approach to developing solutions to locally identified problems. The introduction of woodless, doomed and vaulted roofs to solve housing problems, and the protection of gardens from flood damage by the construction of check dams are two examples that have not only proved successful, but more importantly, fall within the capacity of the local people to execute, maintain

and multiply without access to foreign skills or materials. In the same vein, the recent introduction of well-building techniques, using small concrete bricks, has allowed the people to build wells for themselves without recourse to heavy and expensive equipment.

Over the next few years, the project will continue to refine and develop activities in a way that provides the people with concrete evidence of their value. There is little hope of success unless the people themselves perceive the usefulness and benefit from efforts to conserve, rehabilitate and develop their natural resources. Above all, the project's desire is to demonstrate that there are appropriate ways to improve one's lot and to complement the local people's obvious resilience to hardship, by fostering the skills, awareness and attitudes needed to dispel the fatalistic belief that one is merely a slave to the whims of one's environment.

Island of rocks, island of life, the Air is also an island of hope.

— John E. Newby



John Newby represents IUCN and WWF in Niger.

Mali: Putting Across the Message

The Inner Niger Delta is a floodplain situated in central Mali. It has been described as an island of rich natural resources in a country more and more environmentally degraded: 58% of Mali's territory is already classified as desert and 30% of the rest is threatened. As a result of this bounty, for 700 years the delta has been the core of major African political and economic systems, such as the Mali, Bambara and Macine empires.

Annual flooding of the delta by the Niger and Bani rivers has enabled the region to provide Mali with most of its rice and 90,000 tonnes of fish, supporting a million cattle through the dry season and two million sheep and goats on its lush pasture land. The delta has some 130 species of fish, 350 of birds (including 108 major migratory types) and a variety of important food grains growing wild.

However, population growth, drought and land-tenure systems have led to a continuing degradation of this productive area. In the past, a comprehensive and effective method of land management reduced conflicts between agriculturalists, pastoralists and fishermen, allowing the timing and intensity of grazing to be regulated. This system is now disintegrating. As a consequence, social conflicts and overexploitation of natural resources are serious dangers.

IUCN has been working in the delta under the umbrella of the Mali National Directorate for Forests and Water (DNEF).

An IUCN project mission went to Mali in 1982 to investigate the situation. Since 1984 it has worked with the West German Ministry for Economic Cooperation (BMZ) and WWF on a three-year US\$797,000 project for creation and development of reserves in the Inner Niger delta.

The project centres its efforts on the Circle of Youvarou, a region encompassing 7139 sq km in the north of the delta, with some 79,000 inhabitants and 167 villages.



Under the project, three multiple-use protected areas were established, enabling Mali to ratify the Ramsar Convention on wetlands. Now expanded to become the Inner Niger Delta Conservation Project, with a SFr 4.3 million budget projected for 1990-92, it has four parts:

1) **Local action.** Activities under this heading are designed to provide a permanent forum for discussion and contribute to regional land-use planning. A dominant segment promotes the role of women in use and management of natural resources.

The DNEF assigned a woman forestry engineer to the project to establish a programme with women's groups already existing in the Circle of Youvarou. After local consultations, the project workers undertook to provide help in gardening, improving local stoves and managing fuelwood supplies. In March 1989 two demonstration plots were prepared, introducing improved methods for vegetable production. The new technique has already proved very popular

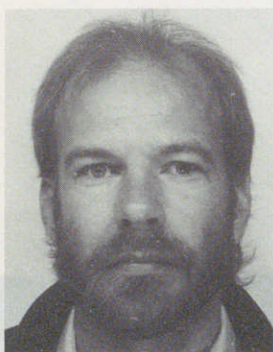
"Murets" (little walls) hold a mixture of water, soil and manure in garden plots of Youvarou; this technique is rapidly spreading to neighbouring villages (photo: IUCN/Roger Michel).



Roger Michel is Director of the Youvarou project.



Walia clubs put their backs into natural resource management (photo: IUCN/Monique Trudel).



Peter Hilaire is Sahel projects manager at IUCN headquarters.

and there is growing interest among the local people in testing the system in their home villages.

2) **Ecology.** Activities here are designed to develop management systems for bourgou (*Echinocloa stagnina*), the reedy grass that is a principal source of food for livestock in Mali's Niger delta. The aim is to discover the effect on productivity of different management and exploitation systems.

The other major ecological issue being tackled in the Circle of Youvarou under the project is that of *forêts mortes* (dead forests). Covering some 200,000 ha, the zones of *Acacia nilotica* offer an almost barren landscape. Absence of regular floods over the past 20 years, reduction of underground aquifers, and overgrazing have completely destroyed ground vegetation. Even after rain very little regrowth takes place, because the seed reserve has been virtually exhausted.

Aware that fuelwood, grazing vegetation and wind protection for the land could be lost if the trees vanish, IUCN is working with the Forestry Service to find the best ways to counter these threats. It has already been noted that certain species are able to survive in places where most of the Acacias are dying, and field studies are being carried out.

3) **Forestry.** The Service has special responsibility for working with local communities in protecting and managing the forests and the wood resources. This section of the project makes use of the Forestry Service's extension capacity in conjunction with technical support activities.

4) **Technical Support.** Under this heading, the project team works with village committees and supports their efforts to organize production and management of natural resources predictably and sustainably.

Work is presently under way in Akka Goun, a 50 ha island at the northwestern tip of Lake Debo. The vegetation is composed essentially of *Acacia kirkii* and bourgou. The island is flooded each year, and its trees are a preferred nesting site for migratory birds, while the submerged bourgou shoots are an ideal spawning ground for fish.

Productivity of the island's natural resources has been severely strained by the combined effects of a reduction in flood heights and rainfall, and increased competition among users (pastoralists, fishermen, cultivators and birds) for access to diminishing resources.

In agreement with the local people, no grazing or wood cutting has been allowed since 1986. The vegetation recovered substantially, interesting many local people in exploiting this revitalized resource. A management committee has been formed by the three villages concerned in order to reach agreement on

rules for access and use. Under the project, the team advises and assists the villages in defining and implementing these rules.

The project has also launched a programme of education for school children about the delta's environment. A major tool has been a bulletin *Walia* distributed to the 25 secondary schools across 78,635 sq km of delta around Youvarou. The area has some 35,000 children of school age, but only 5000 in the senior classes. School attendance – 8% of the children – is the lowest in the country.

Walia

Walia, the bulletin produced for school children in Mali's Mopti region, is named after an African stork (*Ciconia abdimii*) identified in folklore with happy events, the harbinger of rains and the sign of good harvests.

The US body CARE-Mali provided some financial support in launching the education programme and creating the bulletin. The French magazine *Télérama* through *Action Ecole* provided support for the second year, and the Canadian Centre for Research and Technical Cooperation (CECI) provided an outreach worker for IUCN while the DNEF supported the project with staff and equipment. Since 1987, the project has operated with funds provided by West Germany (BMZ) and the Nordic countries.

Walia, appearing every three months, is aimed at secondary school pupils as the children most likely to pass on their learning to adults and those who cannot read. To stimulate their interest, the journal uses lots of illustrations, competitions, games and examples taken directly from the children's experience. Children are encouraged to send in their comments, suggestions, drawings and articles.

The project team visits each of the 25 schools to talk to children and teachers, and considers these contacts an essential part of the project's educational work. Copies of the 24-page magazine are given to each teacher, and one copy is provided for every two students. Partners and national services in the region also receive copies, which are now printed on an offset machine, with 5000 copies of each edition appearing three times a year.

The project has experimented with unconventional ways of transmitting its environmental message. Illustrations of themes and games featured in the bulletin are reproduced on big boards and used for active participation by the children in discussions. The project team has also taken the initiative in creating *Walia* clubs in the schools visited, enabling the children to practise natural resource management.

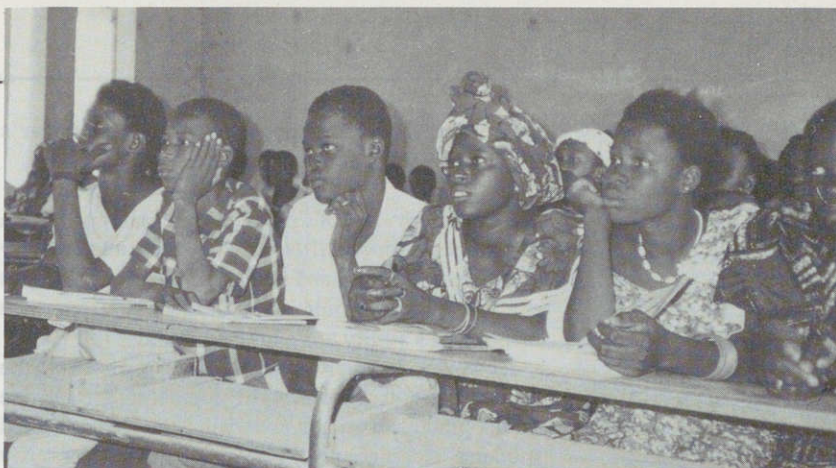


Monique Trudel is *Walia* Project Director.

Walia has proved itself popular with adults as well as children and has become a forum for ideas and debate on local environmental issues. Exposure to the magazine has stimulated activities even outside the schools, helping to bring environmental education out of the strict school environment to reach other groups in rural society.

"If *Walia's* success continues," suggests project leader Monique Trudel, "it could become a force for environmental awareness throughout the Sahel."

— Peter Hilaire



Walia stimulates environmental activities among school children in the Mopti region of Mali (photo: IUCN/Monique Trudel).

Land-use planning in the Sahel

The concept of land-use planning is well known and widely used. It has been more or less well applied in most countries even where it is not explicitly recognised as such. The planning of a new road or the classification of an ecological zone are common examples of land-use planning. The management of territory can be carried out through active or relatively passive measures depending on how the concept is applied.

Up until now in the Sahel the principal posture of human beings towards their ecological and agricultural/livestock capital has been that of a predator, systematically exploiting the natural resources around points of human concentration. Even agriculture and animal husbandry, the most eminent examples of human interaction with nature, have become so intensive in recent years that they surpass the capacity of natural ecosystems to regenerate themselves.

The vicious circle of demographic pressures, desertification and loss of fertility is well known and well described in *The IUCN Sahel Studies*, 1989.

In the rapidly evolving relationship between people and nature in the Sahel today it is clear that production systems based on the presumption of a never-ending supply of natural resources is threatening the survival of the environment before a new and more viable relationship can be established.

The major threats facing the Sahel today as a result of competition for access to resources are clear:

- **Exhaustion of the land** with its consequences for production systems whether cultivated or pastoral. The cultivators show a tendency to increase acreage under cultivation, moving further and further into the northern limits of the Sahel, which is traditionally a pastoral zone in the wet season; the pastoralists tend in the dry season to descend earlier and further south in the Sahel, hindering natural regeneration and encroaching upon nature reserves and national parks.

- **Acceleration of migration to urban centres** where the problems of housing, energy supply and employment are already acute, with the consequences that this implies for national self-sufficiency in food.

In the face of such threats it is already apparent that it is pointless to multiply the number of so-called productivity-oriented projects if the long-term needs and capacities of the rural societies are not taken into account. Such planning must be based on the will of the population to promote a different relationship with

the natural environment. There are a number of examples of where this approach has worked.

1) Integrated rural development in the Keita district of Niger.

Only a decade ago the hills and valleys of the Keita district of Niger suffered a devastating drought. The population, composed roughly equally of settled farmers and nomadic herders, virtually deserted this region of 4860 sq km, once the millet granary of Niger. Most able-bodied people left for far-off urban centres.

Today Keita is a vast, well-developed area from the top of its hills to its lowest valleys.

How did this change occur?

The difference in Keita is not due to the return of dependable or abundant rains but simply to a change in human attitudes. During 1983 and 1984 the political authorities, the resident population and a bilateral donor, assisted by the Food and Agriculture Organization of the United Nations, put their efforts together in an attempt to formulate a coherent plan for use of the zone. The techniques were simple, well-known, easy to communicate and learn: contour terracing on the slopes, semi-circular plots and plantations of local species lower down, anti-erosion barriers and sorghum cultivation on the terraces, small livestock fencing and dry-season cultivation down in the valleys. The remaining population (women, children and elders) had nothing to lose by trying them.

Today the population has returned. Thanks to voluntary participation and effective social organization in the district, Keita is now one of the richest regions in Niger in terms of agricultural production with average yields of 1.5 tonnes of sorghum a hectare, abundant livestock and an advanced infrastructure. The sub-regional development council evaluates progress each year and programmes the development plan for the zone.



A small-scale system of dams will retain water and help rehabilitate this habitat in the Air, Niger (photo: WWF/John Newby).

SPECIAL REPORT



Amadou Mamadou of Niger is an IUCN Regional Councillor for Africa.

2) Integrated management in a hunter-gatherer's zone: Nazinga, Burkina Faso.

The forest valley of Pó in Burkina Faso was once a luxuriant corner of Africa – rich in game and sparsely populated. Hunting and gathering satisfied the needs of the local population without straining the ecosystem's ability to regenerate itself.

However, the arrival of nomadic herds from the north as a result of the drought, population growth, the development of roads, tourism and uncontrolled modern techniques of poaching have seriously degraded the area's resources and created enormous pressure, in particular on its fauna.

In late 1979, the Government of Burkina Faso obtained a grant from CIDA, the Canadian International Development Agency, to establish a programme to manage the zone as a game reserve. This programme has now evolved into a full-scale development and land management programme through which the local population has re-established a measure of control over the territory they need to live, and participated in the definition and application of a rational and durable exploitation system. Traditional production systems have regained a vitality they had lost

(farming, breeding, fishing, and hunting). Poaching has almost entirely disappeared. Fishing has been reintroduced. A network of roads and other infrastructure development enables tourism to continue without disturbing the wildlife or the ecological equilibrium.

These and other examples of successful integrated management of rural areas are the result of combined efforts. From the rural population itself is required a determination to harness their environment in a manner conducive to sustainable production. The role of national and local governments is to help the population to understand the elements involved. Very often, the solution springs directly from this combination.

As for the external partners in this process (bilateral aid agencies, development banks, multilateral organizations and NGOs), they must understand that development in Africa cannot be achieved by piecemeal distribution of projects.

The Sahel has little time to face the challenge of a diminishing resource base. The nature of the challenge is clear: harness the productive potential of the land or, sooner or later, abandon the Sahel to the desert. But the solution is within reach.

– Amadou Mamadou

At the NORAD Conference on Climate Change held in Oslo on 6 June 1989, IUCN's Sahel Committee for Environment and Development provided a grassroots perspective on the problems of the region. This committee is composed of IUCN correspondents in Western Sahelian states, and the IUCN Regional Councillor is an advisor. This is what they told the meeting:

Life tomorrow in the Sahel

What is the Sahel?

The Sahel is not a dry parched land. It is not just dead animals, hungry children and desperate adults. The Sahel is the interface between the great African desert, the Sahara, and the tropical humid zones. The countries of the Western Sahel have a unity which is partially historic, partially geographic, which can be characterized as follows:

- a fragile and unstable ecosystem where only an adequate vegetation cover can maintain the fertility of the soils by recycling the nutrients;
- markedly arid ecosystems where periods of drought, once sporadic, are now appearing at shorter and shorter intervals;
- the absence of non-renewable natural resources which might be economically exploitable (in spite of the richness of the subsoil);

- surface water, wildlife, flora in general and notably herbaceous pasture are getting rarer;
- difficulty of access to the production zones.

These points of similarity between the countries of the Sahel have also con-

tributed to the forming of Sahelian men and women with common backgrounds.

Initially not very many people lived in vast areas (density: two inhabitants/sq km). They were organized in small family groups or clans and were able to live without exhausting the natural resources – and without really having to worry about the management of these resources.

Natural and man-made catastrophes, such as drought and famine, invasions of locusts, tribal wars and slavery, always re-established equilibrium in an ecosystem of which man was an integral part.

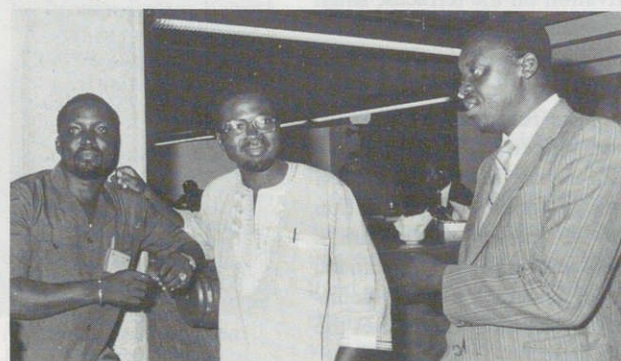
What has happened, that in less than a century, we have seen land degradation get worse and agricultural production slip into continuing deficit?

In the considerable literature devoted to the Sahel, much has been made of the drought of the last 20 years. The deficit in rainfall has only accelerated a process which has its origins in the colonial era.

Indeed, during colonial times, the natural regulators of human population were removed, thereby unbalancing the ecosystem:

- rapid increase of population (up to 3% annual growth rate) and of livestock;
- concentration of people in the cities (annual rate of increase 7%) and around water sources where we observe land degradation;
- the upsetting of, and creation of conflicts between, production systems, reduction in land left fallow, and increase in livestock numbers – leading to land degradation, of which the last step is the desert;
- the allocation of all land rights to the State, with the consequent loss of control over resource use and access by the rural population.

The Sahel delegation to the Oslo conference: Nampaa Sanogho, Souleymane Zeba and Daboulaye Ban-Imary.



In order to survive, Sahelians each year cut down large areas, harvest the wood, overgraze the land. But can you fault the peasants for producing to feed themselves and to supply the cities?

Many projects have tried to get the Sahel to produce differently, and sometimes different products. An analysis of such projects in the beginning of the 1980s shows that many of them were ecological failures. These projects have on the whole not managed to integrate into the rural traditions techniques able to redress this situation.

- In the agricultural sector, projects did not give sufficient importance to the protection of soils, to the retention of water, and to an equitable distribution of land between cash and food crops.

The concept of integrated planning of village land use has not been understood.

- In the livestock sector, measures have been aimed mainly at improving animal health. This approach did not take account of the notion of equilibrium between livestock and its ecosystem, or of rational processing and commercialization of animal products.

- In the forestry sector, conservation and management of natural forests have not been given sufficient attention or resources. Only forestry projects based on the introduction of exotic species have really taken off. They have not been capable of solving the fuelwood crisis or of protecting the soil against degradation.

- We have found and provided water for men and for animals, but we did not foresee the impact on other natural resources from the large displacement of people and livestock this entailed.

Infrastructure projects did not take into account the ecological consequences. Some road construction projects are examples of this.

The most evident consequences of this are:

1. Competition between production systems (agriculture, livestock, fuelwood production, urban needs) for access to the land and its resources.
2. Rapid degradation of the vegetation cover.
3. Advanced degradation of previously untouched land and hence of biological diversity.
4. Increasing pressure on parks and protected areas by livestock.
5. High rates of urbanization, which create food and energy demands difficult to satisfy.

If these tendencies continue, the Sahel will face some major risks. Some of these are:

- **The loss of our natural resource base.** Large parts of our national territories might become uninhabitable and lost as a valuable natural resource base, because of lack of water, loss of fertile lands and vegetation cover.

- **Loss of biological diversity.** Until recently, such diversity has allowed pastoralists and farmers to make up food production deficits during periods of scarcity.

- **Population increase.** The increase in population, in the absence of adequate education and training, is not likely to transform demographic growth from a liability into an asset.

- **Uncontrolled urbanization.** This can have severe consequences if not accompanied by sufficiently vigorous agricultural and industrial sectors.



A young Ethiopian woman faces an uncertain future with a smile (photo: WWF/Jörg Paul Müller).

Donor countries and development aid organizations should support specific policies and provide adequate means for them. Programmes which they finance should reflect these policies.

If the worst is to be avoided, appropriate and coordinated efforts will be required of all partners in the development process.

Governments will have to continue to revise their economic and agricultural policies. It is not simply a question of implementing, year after year, structural adjustment programmes allowing budgets to be balanced at the lowest possible level. It is rather a question of transferring the responsibility for long-term planning and implementation of land use activities to rural communities.

The Sahel Programme of IUCN, which is supported by Norway and other Nordic governments, is of interest to us in that it offers the following advantages:

- support by a long-term programme, not simply *ad hoc* projects, for management of natural resources and economic development;
- a regional approach towards activities to combat the degradation of ecosystems;
- recognition of the need to base land-use planning on the decentralization of development and the active participation of the population, notably women;
- the conservation of biological diversity through the management of protected areas, based on traditional knowledge and practices in the Sahel;
- achievement of a better understanding of the situation in general, of the physical and of the human environment, through research, education and training aimed at all levels;
- rehabilitation of degraded zones and promotion of control over excessive and unrestrained urbanization;
- promotion of a better adaptation of land tenure systems and related institutions to present needs in natural resources.



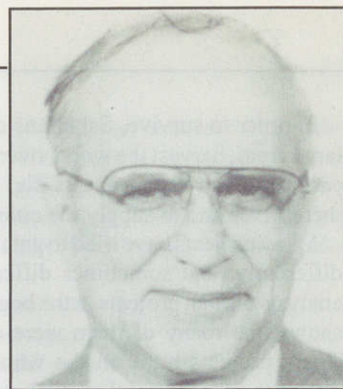
Copies of *The IUCN Sahel Studies*, 1989, are available from the IUCN Publications Services Unit, 219c Huntingdon Road, Cambridge CB30DL, U.K. Price: £12.50 or US\$25.00.

Members receive a 33% discount.

PEOPLE

George B. Rabb, Director of Chicago's Brookfield Zoo and President of the Chicago Zoological Society, has taken over as Chairman of the Species Survival Commission.

A native of Charleston, South Carolina, Dr Rabb holds degrees in zoology from the University of Michigan. His work with IUCN began as representative of the American Association of Zoological Parks and Aquariums on the SSC. He has served on the SSC Steering Committee since 1983 and became its Chairman in 1988. He currently holds the Chair of both the American Committee for International Conservation and the Board of Trustees of the International Species Information System. He served on the World Bank's Task Force on Biodiversity and at the 1981 U.S. Strategy Conference on Biological Diversity. A member of numerous national and international scientific societies, Dr Rabb has published on the behaviour and taxonomy of reptiles and amphibians, the behaviour of wolf and okapi, and on conservation education.



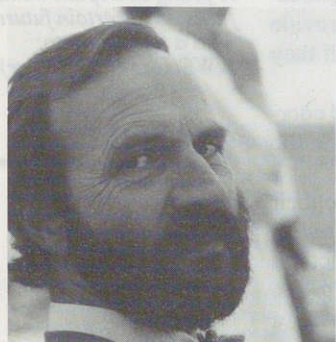
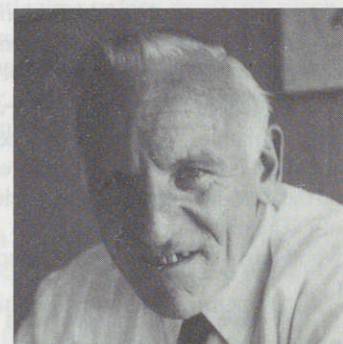
Kenneth A. Brynaert has recently replaced David Munro on the IUCN Council.

Since his conservation work began in 1953, Kenneth Brynaert has devoted his considerable business, administrative and communications skills to promoting wildlife conservation in Canada, and has significantly influenced the shape of Canadian public policy on the wise use of renewable resources. He helped build the Canadian Wildlife Federation into Canada's largest membership organization and the world's second largest volunteer conservation organization. He co-founded the Institute for World Conservation and Development, and in 1988 was appointed Vice Chairman of the Fur Institute of Canada. The recipient of many awards and medals, Brynaert in 1989 was named to the UNEP Global 500 Roll of Honour.

P.H.C. (Bing) Lucas, a "veteran actor in the world conservation drama", has returned to the IUCN stage as a member of the Secretariat for the latter half of 1989. Bing is acting as

Programme Coordinator for the Commission on National Parks and Protected Areas (CNPPA) while Jim Thorsell is on study leave at the East-West Centre in Hawaii.

Bing was former Director of National Parks and Director-General of Lands for New Zealand. He has been a member of CNPPA since 1971, was an IUCN Regional Councillor from 1978 to 1984, and was head of the local organizing committee for the 1981 General Assembly in Christchurch.



Paul Driver joined IUCN Headquarters in November last year as Coordinator of the Union's Environmental Impact Assessment (EIA) Support Service. He also supervises the associated Consultants Register and provides technical input to various field projects.

Dr Driver is a biologist who has specialized in marine ecology and fisheries. He was chief executive of the regional authority responsible for marine pollution control and fisheries management in N.W. England and N. Wales, and in 1980 joined the international environmental consultancy of W.S. Atkins & Partners as head of the environmental assessment and ecological studies department. It was in this capacity that he first worked with IUCN on various EIA assignments and field projects, including the Korangi Creek project in Pakistan with which he is still concerned.

Colette Dehlot has joined IUCN to lead the new Programme on Women in Natural Resources Management. A citizen of the Congo, she has had educational and professional experience in several African and European countries. She is a pediatric nurse and holds a Master's Degree in Public Health and Tropical Disease from Tulane University (USA). In the Congo, Colette has held mid-level management positions in the Ministry of Health and Social Affairs. She is currently completing her PhD in population and health policies at Pennsylvania State University (U.S.).



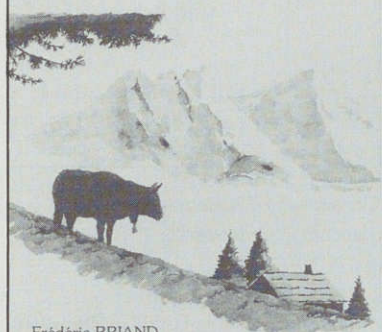
Guatemalan **César Barrientos** has become the new Director of IUCN's Regional Office for Central America, based in San José, Costa Rica. He has Master's Degrees in both environmental and sanitary engineering. His post-graduate studies included environmental engineering at the Federal Polytechnic of Lausanne (EPFL), Switzerland, and the University of Mexico; general and applied hydrology in Spain and sanitary engineering in Guatemala.

On April 10, Professor **Vernon Heywood**, IUCN's Chief Scientist for Plant Conservation and Director of the Botanic Gardens Conservation Secretariat, was awarded *El Can de Plata* ("silver dog," shown at right), the highest award of the Island Government of Gran Canaria for his pioneering work in nature conservation and defence of the particularly sensitive environment of the Canary Islands.



THE ALPS

A system under pressure



Frédéric BRIAND
Michel DUBOST
David PITT
Dominique RAMBAUD

IN PRINT

The State of the Alps

The European Alps have long suffered from such problems as depopulation and forest mismanagement. Today a new set of problems can be added to the list, including pollution, mass tourism and agricultural decline.

The Alps: A system under pressure, published by IUCN and ICALPE, the International Centre for Alpine Environment at Chambéry, France, stems from a workshop organized by IUCN in December 1987. It describes the state of the Alps today in simple language accessible to a wide audience. Issues are given a historical perspective, with special attention to the environmental and socio-economic context.

The Alps are a precious part of the European heritage. Restoring them to a healthy state for the lasting use and enjoyment of future generations is a matter of urgency. This book demands action from all relevant sectors of society, from ordinary citizens and local associations to central governments and international organizations. It also offers some solutions, and should stimulate debate among all those who have a stake in the preservation of the Alps.

Two from COE:

An **Islands Directory** has been prepared by Dr Arthur Dahl, who chairs the Island Conservation Task Force for the IUCN Commission on Ecology (COE). It is the result of a two-year collaboration between COE and the IUCN Marine Programme devoted to assembling an extensive database on more than 1200 islands around the world, including their geomorphology, climate, biological diversity and legislative status. The Directory also identifies islands which share common features, and highlights those particularly under threat.

This is the first time such exhaustive information is presented in a single volume. The Directory should be of interest to island managers, researchers, and governments who will need standardized data on their islands for improved management.

"Traditional ecological knowledge" is the term applied to the wisdom acquired by human beings over thousands of years of direct contact with nature. It is an essential resource which is seriously endangered by destruction of the Earth's remaining natural habitats and by the rapid disintegration of the social web of traditional cultures.

A new volume of essays compiled by the COE's working group on Traditional Ecological Knowledge offers glimpses of the profound understanding and practice of "ecology" demonstrated by traditional societies on several continents.

The book is intended to encourage dialogue between ecologists and anthropologists, and to spread the word among researchers that traditional knowledge has much to contribute to modern environmental science as well as to agrobusiness and the pharmaceuticals industry. The essays also convey the powerful message that ethics and environmental wisdom call for a true partnership with indigenous populations, taking into account their perspectives and future well-being in the formulation of development policies.

Also of interest:

Common Property Resources: Ecology of Community-based Sustainable Development, Edited by Fikret Berkes (1989: Belhaven Press, London).

The contribution of traditional knowledge to the science of managing fisheries, wildlife, forests, grazing lands and water resources has often been overlooked. This book helps make up for the oversight. Edited by Professor Fikret Berkes of Brock University, a long-time member of IUCN's Commission on Sustainable Development (CSD), it unites contributions from several distinguished ecologists. Order from: Belhaven Press, 25 Floral Street, Covent Garden, London WC2E 9DS, U.K., hardback. Price £29.50.



Important Bird Areas in Europe, ICBP Technical Publication No. 9. Edited by Richard Grimmett and Tim Jones (1989: International Council for Bird Preservation, Cambridge, U.K.)

This 900-page tome is ninth in a series of Technical Publications being produced by the International Council for Bird Preservation. It is the result of collaboration with the International Waterfowl and Wetlands Research Bureau and sponsorship by the Royal Society for the Protection of Birds. Its editors have succeeded in drawing together information on 2444 important

areas for birds from 33 different countries. In spite of some unevenness in coverage, resulting from incomplete knowledge of the bird faunas of certain countries, this book represents the first attempt to identify priority sites for bird conservation on a pan-European scale, and will inevitably form the starting point for coherent strategies to conserve Europe's avifauna for many years to come. Order from: ICBP, 32 Cambridge Road, Girton, Cambridge, CB30PJ, U.K., price £21.50.)

World Directory of Environmental Organizations, Third Edition, August 1989. Edited by Thaddeus C. Trzyna, with the assistance of Ilze M. Gotelli. 175 pp. ISBN 0-912102-87-X.

This is the only comprehensive guide to organizations in all parts of the world that are concerned with the urgent problems of the environment and natural resources. The Third Edition, completely revised since the 1975 edition, describes more than 2100 governmental and non-governmental organizations in 218 countries. It provides quick access to sources of information on such global environmental problems as climate change, pollution and tropical forest destruction, and related fields such as population, energy and development.

A cooperative project of the California Institute of Public Affairs, the Sierra Club and IUCN the book is edited by the President of the California Academy and a member of the steering committee of the IUCN Commission on Sustainable Development.

From outside the USA, the Directory may be ordered from the California Institute of Public Affairs, P.O.Box 10, Claremont, CA 91711, USA. Its price is US\$38.00 (surface mail) or \$48.00 (air).

The Catalogue of IUCN Publications has just been published and is being mailed to all IUCN members.

The next IUCN General Assembly will be held in Australia.

For details, see the next *IUCN Bulletin*.

1989

1-5 Nov	Los Angeles	Globescope Pacific Assembly (Global Tomorrow Coalition)
2-3 Nov	Zurich	European Conference on Debt and Conservation (WWF-International)
6-18 Nov	Addis Ababa	6th International Soil Conservation Conference (International Soil Conservation Organization)
6-10 Nov	Troia (Portugal)	4th Consultation of Designated Experts on Flora and Fauna (ECE)
6-7 Nov	The Hague	Ministerial Conference on Atmospheric Pollution and Climatic Change (Govt. of the Netherlands)
6-8 Nov	Barbados	Conference on Economics and the Environment (Caribbean Conservation Association)
6-12 Nov	Panama City	Primer Congreso Internacional Indígena sobre Manejo y Conservación de Recursos (PEMASKY)
6-9 Nov	Amsterdam	International Forum on Population in the Twenty-First Century (UNFPA)
7-8 Nov	Paris	International Symposium: Nitrates, Agriculture, Water (Institut National Agronomique)
7-11 Nov	Prague	Prague Assembly for Disarmament and Solving Ecological and Urgent Problems of Development (Union of Czechoslovak Architects)
8-10 Nov	Strasbourg	Colloquy on European Invertebrates (Berne Convention/CoE)
10 Nov	Paris	General Assembly of States Parties to the World Heritage Convention-7th Session (Unesco)
13-17 Nov	Geneva	Seminar on the Role of the Chemical Industry in Environmental Protection (ECE)
13-18 Nov	Doñana (Spain)	Wetlands Seminar (Berne Convention/CoE)
14-18 Nov	Male	Small States Conference on Sea Level Rise (Govt. of the Maldives)
15-17 Nov	Paris	Group of Economic Experts (environmental matters) (OECD)
15-17 Nov	Santa Fe (USA)	Workshop on Environmental Issues, Economics and Public Policy (Santa Fe Institute)
15-17 Nov	Berlin	Workshop on Concepts for systematic assessments on the biodegradation and aquatic toxicity data of surfactants (EEC)
20-24 Nov	Auckland	Conference on Ecological Restoration of New Zealand Islands (Dept. of Conservation)
20-21 Nov	Gland	24th Meeting of the IUCN Bureau
21-23 Nov	Poland	Expert meeting on Industry (in preparation for the Bergen Conference)
21-24 Nov	Geneva	Executive Body for the Convention on Long-Range Transboundary Air Pollution (ECE)
22-24 Nov	La Habana	1st Cuban Forestry Congress and International Symposium on Agroforestry Techniques (Instituto de Investigaciones Forestales)
24-25 Nov	London	Workshop on "Beyond Captive Breeding: Reintroducing Endangered Species into the Wild" (Zool. Soc. of London, Mammal Society, Primate Soc. of Great Britain)
27-28 Nov	The Hague	Seventh Meeting of Experts on Environmental Impact Assessment (EEC)
27-29 Nov	Strasbourg	Colloquium on the Conservation of Wild Relatives of Crops (CoE/Israel Nature Reserves Authority)
27 Nov-1 Dec	Gland	Workshop on Case Studies in Population and Natural Resources (IUCN-Population Programme)
28 Nov-1 Dec	The Hague	Third Meeting of Ad Hoc Working Group to elaborate a draft Framework Agreement on Environmental Impact Assessment in a Transboundary Context (EEC)
29 Nov-1 Dec	Bujumbura	Symposium on the Utilization of the Resources and the Conservation of the Great Lakes of Africa (University of Burundi/International Limnological Society)
29 Nov-1 Dec	Madrid	Conference on Biological Diversity (ADENA/WWF-Spain)
29 Nov-1 Dec	USA	Expert meeting on Economics (in preparation for the Bergen Conference)
3-7 Dec	Lunteren	European Conference on Landscape-Ecological Impact of Climatic Change (Netherlands Ministry of the Environment)
4-7 Dec	Kathmandu	High Level Consultative Meeting on Environmental Conservation for Basic Human Needs (King Mahendra Trust)
4-8 Dec	Strasbourg	9th Meeting of the Standing Committee of the Berne Convention (CoE)
4-8 Dec	Manila	Fourteenth Session of the Asia-Pacific Forestry Commission (FAO)
9-13 Dec	Oxford (UK)	Third International Swan Symposium (IWRB)
10-17 Dec	Montevideo	Primer Congreso Latinoamericano de Ecología (International Assoc. of Ecology-CIPFE)
11-13 Dec	Valletta (Malta)	Consultation meeting on the use of Findings on Environmental Research to Environmental Education (Foundation for International Studies)
11-14 Dec	Alicante/Valencia	The Management of Water Resources on the Eve of the 21st Century (AIDA)
11-14 Dec	FRG	Expert meeting on Energy (in preparation for the Bergen Conference)
11-15 Dec	Paris	13th Session of the World Heritage Committee (Unesco)
12 Dec	Washington, DC	Special Conference on Taking Global Sustainability Seriously (WRI)
12-14 Dec	Paris	Environment Committee (OECD)
13 Dec	London	National Parks 40th Anniversary Conference (Countryside Commission)
14-17 Dec	Bangkok	International Conference on Water '89 (Asian Institute of Technology)

1990

8-10 Jan	Geneva	Ad Hoc Group Meeting on Environment and Economics (ECE)
11-18 Jan	Tam Nong (Vietnam)	Workshop on the Conservation of Sarus Cranes (ICF)
28-31 Jan	Delhi	Keystone International Dialogue on Plant Genetic Resources
12-15 Feb	Kaziranga (India)	Fifth Meeting of the IUCN Asian Rhino Specialist Group (IUCN/Govt. of India)
22-23 Feb	Gland	25th Meeting of IUCN Bureau
26 Feb-2 Mar	Geneva	Senior Advisers to ECE Governments on Environmental and Water Problems (ECE)

More information on meetings is available to IUCN members upon request. Write to: Delmar Blasco, IUCN Headquarters.